Amateur Radio

November 1997
Volume 65 No 11

WIRELESS INSTITUTE OF AUSTRALIA

Journal of the Wireless Institute of Australia

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Amateur Radio

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Cover

Bev VK4NBC has only held her amateur licence since 1980 but has been very active on the air. She has participated in many nets and contests, particularly Novice contests, successfully.
She has twice won the Florence McKenzie Trophy for CW contacts by Novices in the ALARA Contest. In 1996 she also had the highest overall number of contacts in the ALARA contest.
Bev is seen with the two Florence McKenzie certificates in her shack.

BACK ISSUES
Available direct from the WIA Federal Office, only until stocks are exhausted, at $4.00 each (including postage within Australia) to members.

PHOTOSTAT COPIES
When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus $2.00 for each additional issue in which the article appears).
The opinions expressed in this publication do not necessarily reflect the official view of the WIA, and the WIA cannot be held responsible for incorrect information published.

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Editor's Comment

More to be Said

There are at least two topics we have discussed recently about which more information has now come in.

First, back in June, the *Novice Notes* column on page 39 showed a polarity diagram for the low-voltage connector often used for mobile installations. It consists of a two pin plug with the pins at right angles, so defining a capital T, and a corresponding socket. The diagram (which was poorly reproduced and at least twice as big as necessary) showed polarity as positive on the crosspiece pin of the T and negative on the vertical pin. But a note on the diagram suggested that the opposite polarity was also permissible; and all that was really necessary was that all one's own equipment should conform to the same standard.

Unfortunately, there is a standard for the polarity, and it is the reverse of that shown in June. **THE TOP OF THE T IS NEGATIVE!** This standard was established by a number of emergency services including the CFA and police, and was therefore adopted by WICEN. I am indebted to Peter Mill VK3ZPP/APO who brought all this to my notice in August.

He also reminded us that we had had similar confusion about the same plugs in *Amateur Radio* back in the 1980s. After a rather tedious search I found that an article and numerous letters appeared between March and June 1985; so we should have known better, shouldn't we?

The other topic was my reference in the October editorial to the Millennium Bug. Several members of the Publications Committee are even more informed about computers than the "experts" I had talked to earlier, and they were rather less pessimistic. It now seems probable that most PCs (IBM or clones) should have no trouble in accepting the date change from 1999 to 2000, provided the software being used will allow it. The real impact of the problem will be felt mostly by larger (mainframe) computers, particularly if running obsolete software. Macintosh PCs should also be OK.

In a little over two years we will all know the answer.

Bill Rice VK3ABP
Editor

CONTRIBUTIONS TO *AMATEUR RADIO*

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk or via e-mail are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. A pamphlet, *"How to Write for Amateur Radio"*, is available from vk3br Communications Pty Ltd on receipt of a stamped, self addressed envelope.

WIA News

Roger Harrison VK2ZRH, Federal Media Liaison Officer

WIA Successful at Region 3 Conference

The Wireless Institute of Australia was successful in advocating a number of actions for adoption by the Region 3 Association of the International Amateur Radio Union at its 10th Conference, held in Beijing, the capital of the Peoples Republic of China, over 8-12 September.

The Region 3 Conference also confirmed Australia's proposal to host the 11th conference in the year 2000.

Delegations from 15 Asia-Pacific countries, together with observers from Region 1 and Region 2 IARU associations, and the IARU Advisory Council, attended the 10th Region 3 Conference of the IARU, which was hosted by the Chinese Radio Sports Association (CRSA).

A five-member team attended for the Wireless Institute of Australia, headed by the WIA's IARU Liaison Officer, Dr David Wardlaw VK3ADW. The other four team members were WIA Federal President, Neil Penfold VK6NE, Brenda Edmonds VK3KT, Roger Harrison VK2ZRH and Wally Watkins VK4DO. Only David Wardlaw and Neil Penfold were funded by the WIA to attend, the other three paid their own travel and accommodation expenses

The Conference was chaired by Chen Ping BA1HAM, Secretary of the Chinese Radio Sports Association (CRSA). The Conference President was Xu (sounds like, '*shoe*') Zengwu, President of the CRSA.

Special guests attending the Conference were Mr He (sounds like, '*hay*') Fuqi ('*foo-chee*'), Director of the Office of State Radio Regulatory Commission in China, a director of the International Telecommunications Union's Radio Communications Bureau, Robert Jones, and Ms He ('*hay*') Jin, a representative from the Asia-Pacific Broadcasting Union (ABU). IARU President, Dick Baldwin W1RU, Vice President, Michael Owen VK3KI, and Secretary, Larry Price W4RA, were there as well.

A total of more than 100 people attended.

In speaking before the official opening, the Director of China's Radio Regulatory Commission, Mr Xu, stressed the importance of radio to the Chinese economy. Commenting that the Amateur and Amateur Satellite Services were comparatively undeveloped in China, he said he was pleased to see the Region 3 Conference being held in Beijing so that people could learn from one another.

He concluded by indicating the Chinese administration's support at future World Radiocommunications Conferences, not only for the Amateur Service in general, but specifically for amateurs having a 300 kHz-wide band at 7 MHz, to the delighted surprise of the Conference audience.

The Conference was officially opened by Robert Jones from the ITU, who spoke of the scale of the pending World Radiocommunications Conference, WRC-97, to be held for eight weeks from late-October through early-November, at which 1000 delegates will discuss the global administration of radiocommunications. He said amateur radio was subjected to a rapidly changing environment, with increasing pressure from other services.

Mr Jones commented on issues of concern to amateurs the world over, such as the future review of Article S.25 of the International Radio Regulations, concerning the definition of the Amateur Service and licensing qualifications, and the 7 MHz band issue, all likely to be on the agenda of WRC-99, which is only two years away.

The Conference re-elected David Wardlaw VK3ADW as a director to the five-member board of Region 3 IARU following the retirement of director David Rankin 9V1RH/VK3QV after 24 years of service. He served variously as a director, as Chairman for a period, and also Secretary.

The other four incumbent directors were returned: Sangat Singh 9M2SS, Young Soon Park HL1IFM, Yoshiji Sekido JJ1OEY, and Fred Johnson ZL2AMJ, who was also later re-elected Chairman of directors. Keigo Komuro JA1KAB was re-appointed as Secretary.

More than 100 papers were considered by the Conference. Three working groups were formed to consider and deal with issues raised in the various papers, and to make recommendations to the delegations meeting in plenary sessions: Operations and Policy matters, Technical matter, plus Future of the Amateur Service and ITU matters.

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All 14 WIA papers submitted to the Conference were discussed and recommendations put forward were generally agreed to. The Conference expressed appreciation for the many issues of interest to Region 3 societies raised in the WIA papers. WIA recommendations accepted covered amateur examination and licensing issues, electromagnetic compatibility, amateur satellite issues, promotion of and support for the Amateur Service in Region 3, and ITU matters.

The issues raised by the IARU's Future of the Amateur Service Committee (FASC) were dealt with in the FASC-ITU matters working group, chaired by David Wardlaw VK3ADW. The recommendations of this working group, accepted by the Region 3 Conference but too lengthy to outline here, were consistent with the survey results about the definition of the Amateur Service and licence qualifications canvassed by the WIA over the past year.

In total, some 50 recommendations were considered by the Region 3 Conference plenary sessions, covering:

- important issues to be dealt with at upcoming ITU World Radiocommunications Conferences;
- the fostering of amateur radio with administrations in countries throughout region 3;
- future planning for the IARU Region 3 Association;
- issues relating to electromagnetic compatibility and standards;
- the IARU/NCDXF Beacon Project along with HF and VHF-UHF beacons in general;
- Amateur Radio Direction Finding matters; and
- Intruder Watch monitoring of the amateur bands.

At each Conference, a Finance Committee is formed and the Region 3 Association's finances and budget are considered. The Conference accepted the Finance Committee's recommendation that there be no change in member societies' level of financial subscription to the IARU Region 3 Association.

Some Conference highlights: Vietnam's national amateur society participated for the first time; the Chinese Radio Sports Association (CRSA) supported the retention of the Hong Kong Amateur Radio Transmitters Society (HARTS) as a separate member of the IARU Region 3 Association and as a separate DXCC country since the return of Hong Kong to China on 1 July; and the signing by delegates from the 15 member societies present, together with representatives of the three regional IARU associations and the IARU President, of a Memorandum of Understanding to pursue with their respective administrations a "*Guest Amateur Radio Licence*" for use during short-term, temporary, visits by amateurs from other countries "*... based on the local grades, licence classification and local regulations existent in the guest country.*"

[Released 26/9/97]

World Amateur Radio Day Activities

Saturday, 20 September, was World Amateur Radio Day, an opportunity to bring our hobby to the attention of the community in a positive way. As the name implies, this is a world-wide event initiated and promoted by the International Amateur Radio Union, which Australia only formally joined-in this year. Amateur radio clubs and groups in a number of states planned and put on events for 20 September, but not all came to fruition as planned, unfortunately,

The Shepparton and District Amateur Radio Club (SADARC) in Victoria planned an open day at their club rooms, conveniently located in the town's Mechanics Institute, the former library building. Club President, Jacek Szczurek, said the club publicised the event by sending out letters to schools in the area and advising the local media. A wide variety of amateur equipment was to be on-hand, he said, to highlight such amateur activities as HF and VHF/UHF, packet and amateur TV.

Apart from the South Side Amateur Radio Society's event at a shopping mall in suburban Woodside in Brisbane, reported in the August issue, the Tasmanian Division's Southern Branch put together a public event outside the state's parliament house.

However, the Amateur Radio Balloon Experiment (ARBE) planned by South Australian and Victorian amateurs (also reported in the August issue) was scuttled by bureaucracy in mid-August, unfortunately. WIA South Australian Division Education Co-ordinator, Tony Van Lysdonk VK5WC, had planned to involve school students in tracking a balloon-carried payload comprising a series of environmental sensors and a 2 m FM beacon with voice-synthesised and data telemetry transmissions. In an announcement on the amateur packet radio network, Tony said, "*... the project is not dead just on an indefinite hold.*"

The theme for the 1998 World Amateur Radio Day will be "Amateur Radio - Communicating Worldwide for Three Quarters of a Century". The International Amateur Radio Union Administrative Council decided on the theme at its meeting following the Region 3 IARU Conference in Beijing in September. The theme honours the anniversary of the first transoceanic two-way amateur communication, between France and America, in November 1923. The 1998 World Amateur Radio Day will also fall on 20 September. From the year 2000, the IARU decided that World Amateur Radio Day will occur in April, marking the anniversary month of the founding of the IARU in Paris in 1925, the *ARRL Letter* reported.

[Released 7/10/97]

WIRELESS INSTITUTE OF AUSTRALIA

Your Hobby Your Voice

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WIA at WRC-97 in Geneva

The WIA's ITU Conference Co-ordinator, Dr David Wardlaw VK3ADW, is in Geneva for the 1997 World Radiocommunications Conference, which opened on 27 October and continues through this month.

A number of threats to VHF and UHF amateur bands may emerge at the conference, arising from spectrum being sought by satellite operators who are gearing up to provide mobile telephone services via low earth orbiting (LEO) satellites. In addition, earth exploration satellites may pose a threat to the 70 cm band and spectrum for 'wind profiler' radars is to be discussed. These radars, operated at airports and air fields, are seeking spectrum around 50 MHz, 400 MHz and 1000 MHz. Their operation can affect sensitive amateur receivers in adjacent amateur bands for amateurs living nearby.

Issues for the WRC-99 agenda will be confirmed at WRC-97. Of interest to amateurs is the matter of world-wide harmonisation of the 7 MHz band to provide a 300 kHz-wide band for the Amateur Service, either from 6900-7200 kHz or 7000-7300 kHz. Discussions on spectrum for the short-wave broadcasters at WRC-97 this month could have repercussions for a decision on 7 MHz harmonisation at WRC-99, David Wardlaw told *WIA News*.

In addition, to be confirmed in Geneva this month is the matter of Article S25, about the Amateur Service, as an agenda item for WRC-99. This is the issue being pursued by the International Amateur Radio Union's 'Future of the Amateur Service Committee' (FASC). Article S25 in the International Radio Regulations defines the Amateur and Amateur-Satellite services. Bound up in this issue is the matter of whether the testing of Morse code proficiency for amateur HF band access should be retained or as a treaty obligation or left to each country's administration.

David Wardlaw will be kept busy shuttling between the WRC's three working groups, which will be meeting in parallel.

The IARU Administrative Council, meeting in Beijing over 13-15 September following the Region 3 IARU Conference, agreed on instructions for their delegation to WRC-97, according to the *ARRL Letter*. The core delegation consists of IARU Secretary, Larry Price W4RA, IARU Vice President, Michael Owen VK3KI, and IARU Region 1 Vice President, Wojciech Nietyksza SP5FM.

[Released 7/10/97]

Lucky Victorian Fluke's August Recruitment Prize

New recruit to the Victorian Division WIA for August, **Mr J D Harrison VK3FHV** (no relation), has snagged the Fluke 12B digital multimeter. Meanwhile, as announced in the *Over to You* column in the October issue, June's winner, Roberta Barmore KB9GKX, has donated her prize to be given to a deserving young VK ham of modest means who needs a DVM. WIA Queensland President, Rodger Bingham VK4HD, says the Divisional Council will put on their thinking caps to see that Roberta's wishes are fulfilled.

There's a multimeter to be won every month throughout 1997 in a draw from among new WIA recruits joining in any particular month. The Fluke 12B digital multimeter is worth $195, and the 12 prizes have been generously donated by Philips Test & Measurement. Fluke is the world's pre-eminent manufacturer of digital test instruments and the Model 12B is from their latest range of hand-held instruments.

The Fluke 12B measures AC and DC voltage (with auto-selection above 4.5 V), resistance and capacitance from 1000 pF to 1000 µF. The instrument features a simple rotary dial, a 4000-count liquid crystal display, and diode and continuity testing. Its "continuity capture" feature indicates intermittent open and short circuits. It comes with test leads and a two-year warranty.

Every newcomer to electronics and amateur radio needs a good multimeter, and every seasoned enthusiast could always do with another one. And the chances of winning are *very* good!

Membership recruitment advertisements appear in each issue of *Amateur Radio* magazine, and in *Radio and Communications* magazine.

Membership recruitment and renewal advertisements are also on WIA Divisions' World Wide Web pages on the Internet.

[Released 7/10/97]

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Technology and Future Growth of Amateur Radio

The International Amateur Radio Union (IARU) Administrative Council has set up an *Amateur Radio Outlook Committee* which is to make general recommendations on the future growth and development of amateur radio.

The committee has been established in response to changing technology and the Internet, reports the *ARRL Letter* for 26 September. It is headed by Tom Atkins VE3CDM, President of Region 2 IARU.

The decision came from the IARU's Administrative Council meeting in Beijing over 13-15 September, following the Region 3 IARU Conference.

The Administrative Council (AC) also updated the IARU Strategic Plan for the Development of Support for Amateur Radio, the goal for 1998-99 being to enhance support for the Amateur Service among the African nations. The AC also adopted a resolution encouraging the promotion and development of amateur radio digital technology, reviewed present and anticipated future requirements for radio spectrum allocations to the Amateur and Amateur-Satellite services, reviewed arrangements to participate in Africa TELECOM next year and World TELECOM in Geneva in 1999, and appointed a committee to review the IARU Monitoring System (Intruder Watch).

[Released 7/10/97

UK Amateurs Get New LF Band

The UK's Radiocommunications Agency has told the Radio Society of Great Britain (RSGB) that they hope to release the 136 kHz band early next year for use by all UK Class A amateur licensees.

The 136 kHz band is an allocation available to European amateurs.

The RSGB's *GB2RS News* for 5 October, reported that the present UK-only 73 kHz band will continue in parallel with the new allocation until the end of December 1999, but no new permits for 73 kHz operation will be issued after 31 December this year. The RSGB has requested some extensions of these periods. **ar**

Radio and Communications

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Hang on, what's this? A Kenwood? Nope. It's an **ADI**, and the company's radios are now being sold in this country. If nothing else, you'll like the price — but it has plenty of other things to offer. Check it out... You can also read about one of the biggest threats to wide-tuned general coverage receive we've ever faced.

November's R&C is jam-packed with great features for amateur radio operators. Here are just a few of them...

- **REVIEW: ADI AD-146. How can a new radio cost so little? It's not short on features, either.**
- **USA Bill to BAN scanners and amateur rigs with wide-tuned receive. This is *not* a good move...**
- **DXpedition report: one man took off for an Equatorial island, and actually made *lots* of contacts!**
- **Construction: got an old mobile radio microphone lying around? Turn it into a speaker/mic.**
- **Packet Radio. Is it worth another look, another visit? One enthusiastic VK5 says yes, definitely!**
- ***As usual, we have our three DX columns, mods and more... the best stories and regulars every month!***

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vk3ce

■ Equipment Review

YAESU FT-920 HF and 50 MHz All Mode Transceiver

*Reviewed by Ron Fisher VK3OM**

The Yaesu FT-920 transceiver.

The new Yaesu FT-920 is a mid-priced transceiver which slots between the popular FT-1000MP and the FT-900. It is a fully featured rig with everything that the discerning amateur would require. At a selling price of $2995, a full $1000 less than the FT-1000MP, I am sure it is destined to be a very popular transceiver. It will no doubt replace the FT-990 which has been around for nearly five years now.

One of the most important new features of the FT-920 is the inclusion of the six metre band and I will be looking at its performance on this band in some detail. As I am not equipped for six metre operation, I enlisted the help of well known six metre identity John Patterson VK3ATQ to pass judgement on the FT-920's performance on the 50 MHz band.

Compared with the earlier FT-990, there are two other important differences. The first is the inclusion of full digital signal processing (DSP) for both transmit and receive; and the other is the omission of a built-in AC power supply. In view of the fact that the FT-920 is actually larger than the older FT-990, this is surprising. The FT-920 therefore requires an external 13.8 volt DC power supply capable of supplying 22 amps. The Dick Smith D3800 would be an ideal choice and, in fact, one of these was used for all of my tests.

There is no doubt that the design of the FT-920 is based to a large extent on the highly successful FT-1000MP. Stand back a few metres and one could easily be mistaken for the other. However, the second tuning control is not for a second receiver but for the second VFO. For those who don't require a second receiver this, as I will explain later, is an excellent alternative. The second tuning control is also used for RIT/XIT and menu selection.

FT-920 Features and Facilities

The FT-920 is a large transceiver. The front panel is the same size as the FT-1000MP and the depth of the cabinet is just 30 mm less. The overall dimensions are 410 mm wide, 135 mm high and 316 mm deep. It weighs in at 11.5 kg, somewhat less than the 15 kg of the FT-1000MP due to the omission of the AC power supply, but still hefty enough when you need to carry it around.

The dominant feature of the front panel is the "Omni Glow" display. The bright orange background contrasts with the black lettering to produce a very readable display. This has a multitude of information to convey to the operator. I feel that it is superior to the FT-1000MP display which, under certain external lighting conditions, produced an annoying shadow effect. No doubt the FT-1000MP is more showy, but the FT-920 display is more effective.

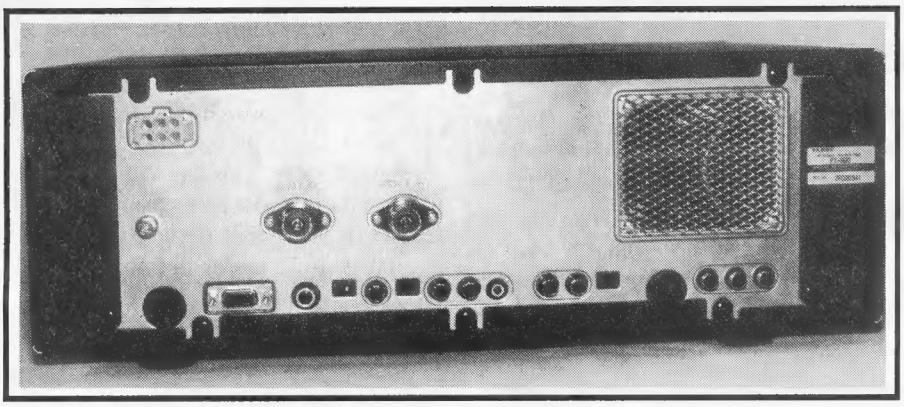
In addition to the "S" meter function, the bar-graph metering has many additional functions. These include power output, ALC, SWR, DC voltage, compression and PA current. All have a "peak hold" function which can be programmed via the menu. Up to three of the above metering functions can be viewed at the same time.

All modes of operation are provided, including FM which I note is only offered as an option in 920s sold overseas. Perhaps the only mode that is not fully catered for is AM. The only AM reception offered is through the standard SSB filter which, of course, sounds restricted. A six kHz filter is offered as an option and this should produce acceptable AM quality.

A medium selectivity CW filter (500 Hz) is available. No optional filters were included in our review transceiver. Several data modes are included with various shifts selectable.

Receiver coverage is from 100 kHz to 30 MHz, and then from 48 to 56 MHz. Unfortunately, there is no receiver coverage between 30 and 48 MHz, which will disappoint keen six metre operators who like to keep an ear on this part of the spectrum.

Transmitter coverage is confined to the various amateur bands. Each band is selectable via a dedicated "band" button and each of these buttons can recall two different frequencies. The same key pad can also be used to enter any frequency directly if required. However, the tuning controls set the FT-920 apart from other transceivers. As mentioned before, the second tuning control is for VFO B. The big difference is that while you can only transmit or receive on one of the two VFOs, they are adjustable independently at the same time.



The rear panel of the FT-920.

Let's say you are listening and transmitting on 14.2 MHz using VFO A and you want to check a DXpedition on 14.250 MHz. Tune VFO B to that frequency and, when ready, push the "RX" button above VFO B and there you are. With a quick push of the "RX" button above either VFO you can check either frequency. The big advantage over the old VFO A/B system is that the other VFO is fully adjustable while using the first. Perhaps not quite as good as a second receiver, but certainly way ahead of older transceivers.

The main tuning control is a delight to use with three selectable tuning steps which give 1, 10 or 100 kHz per knob revolution at tuning steps of 1, 10 or 100 Hz. Carried over from the FT-1000MP is the wonderful "shuttle-jog-tuning" system. This is the large concentric control behind the main tuning control. It is spring loaded from the centre position. As it is turned either left or right the tuning starts up or down with the scan speed increasing the further the knob is held over. Its a great way to zip up and down the band.

Naturally, the FT-920 has a built in automatic antenna tuner. It is capable of matching up to a 3:1 SWR on the HF bands and a 2:1 SWR on the six metre band, and can selected for both transmitter output and receiver input. The ATU has its own memory system with 100 channels. Tuning is very quick, usually under two seconds.

The FT-920 bristles with additional features and I will give a brief mention of some of them. The most important of these is the digital signal processing (DSP). All of the processing takes place at audio frequencies and not, as is often the case these days, at a very low IF frequency. There are advantages and disadvantages for the audio system, but Yaesu have introduced one of the most advanced audio DSP systems available and it works very well.

There are four main DSP functions available. These are receiver noise reduction, receiver automatic notch filter, dual control receiver passband tuning which gives independent control over high and low frequency cut, and finally tailoring of the transmitted audio band pass characteristics. The DSP also has other functions which include control of the transmitter voice operation to give faster response compared to the more usual analogue systems.

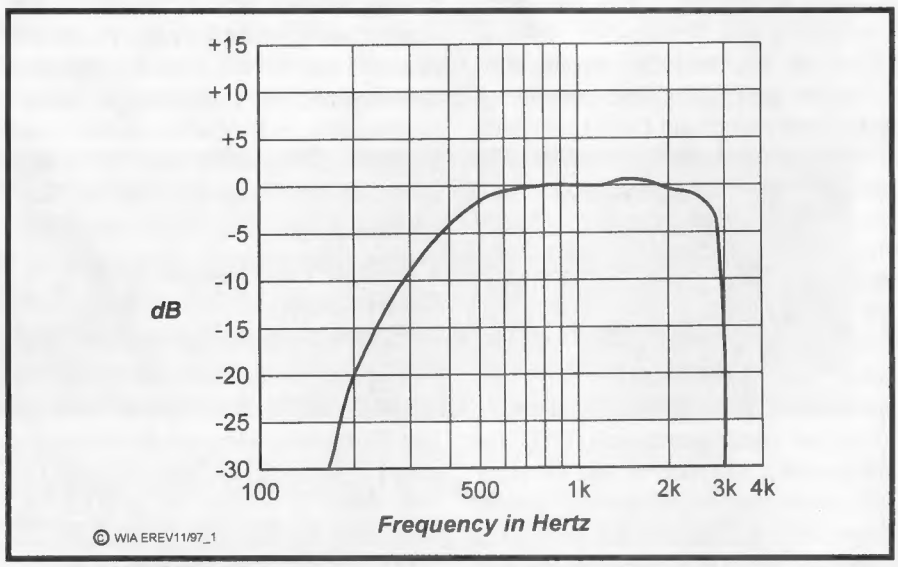
The FT-920 has a built in digital voice recorder which is available to record "CQ contest" type messages. It can also be used on receive to record incoming signals for later reference and can actually be left running continuously so that the last 16 seconds can be replayed when required.

To back up the DSP noise reduction is a fully adjustable noise blanker, and to back up the DSP passband tuning is an effective IF shift control. For the CW enthusiast, there is a built-in electronic keyer with a speed adjustment from six to 60 words per minute, plus a contest message memory system. Up to six messages can be stored, four of which can contain up to 50 characters, and two containing 20 characters.

The menu contains some 73 programmable functions. Probably most of these will not require changing, but a new owner will have lots of fun going through them. Keep your instruction book handy so you can access the menu function you need quickly. Yaesu have thoughtfully included a "quick menu" facility to allow you get to the most needed items without delay.

FT-920 On Air

First connect your power supply. As mentioned earlier, I used a Dick Smith D-3800 power supply for all of my on-air tests. I note that Yaesu do produce a matching external supply for the FT-920, the FP-1030A, which has a noticeable resemblance to the Dick Smith supply. I doubt that we will see the Yaesu supply in Australia as the Dick Smith organisation



The FT-920 transmit audio response on 14.2 MHz with no compression and no ALC.

Top view of the FT-920 with the case removed. Note the cooling fan at the left between the front panel and the HF PA board. The ATU is beneath the metal shield to the rear right.

seems reluctant to import Yaesu power supplies unless they happen to be part of the equipment. The FT-920 is supplied with a heavy duty DC cable fitted with two plug-in plastic automotive-type fuses. A standard six pin DC connector is used to connect to the radio.

On initial switch-on, there is a one second pause while the electronics sort themselves out before the transceiver comes to life. The "Omni Glow" display is the dominant feature, of course. The brightness of this can be set to two intensities. I preferred the brightest setting.

Received audio quality through the internal 7.5 cm speaker was excellent. So much so, that I did not find it necessary to connect an external speaker. For permanent installation, though, a forward-facing good quality speaker could be desirable. Tuning around the amateur bands I was struck with just how clean the audio sounded. The high and low cut filters are very effective and, I must admit, better than I had expected. However, they do have their limitations as, of course, they only remove the effect and not the cause. The same can be said of the notch filter which can remove an offending heterodyne like magic, but cannot eliminate the blocking effect of a close strong signal.

Compared to the FT-1000MP, the overall selectivity is wider and doesn't have the same ability to eliminate interfering signals. There was indeed a good reason for including the Collins filter in the FT-1000MP!

The DSP noise reduction control gives 32 positions of adjustment so you can fine-tune the amount required. Again, I found that for SSB reception I could not find a situation where the DSP could produce a readable signal from an audible but unreadable signal. The single position adjustable noise blanker was very effective eliminating impulse noise and, to a slightly lesser extent, power line noise.

The AGC action was very smooth with the slow decay selected. You have the choice of fast, slow or off. Yes, you can actually switch the AGC off on the FT-920. I am sure this will please many operators.

One very interesting feature of the FT-920 is the use of single control knobs. The only concentric controls are the high/low cut knobs and the shuttle jog control behind the main tuning knob. If you happen to have five thumbs on each hand (some of us do), you will appreciate this feature.

The FT-920 is supplied with a Yaesu MH-31B8 hand microphone. This rather ordinary looking microphone does seem

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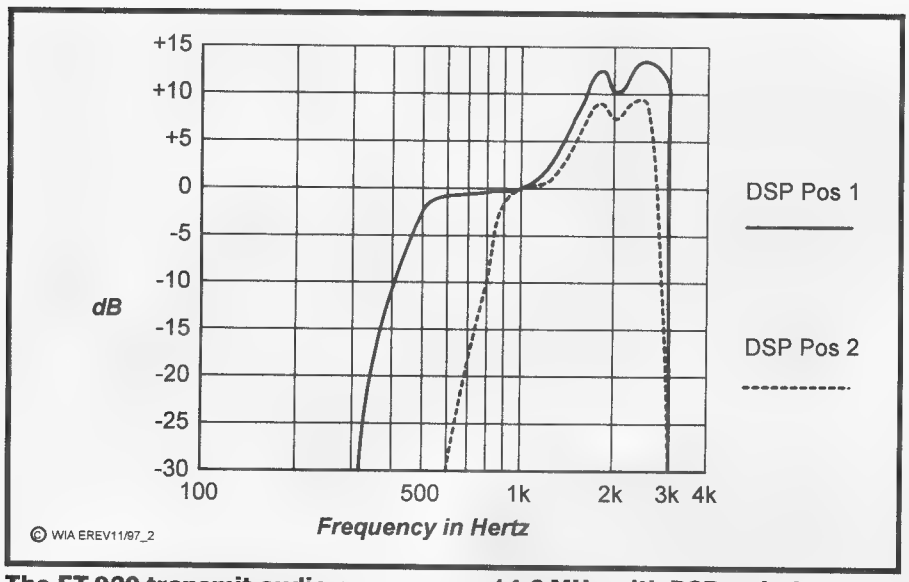


The FT-920 transmit audio response on 14.2 MHz with DSP switched to position 1 and position 2.

to have better than usual audio quality. The up/down buttons are on the front of the microphone and I found them rather hard to get at. In particular, if you need to use the "fast" button in conjunction with one of the other buttons, I found it required two hands, or at least a finger from each hand.

Reports on the transmitted audio were very favourable but, in general, the audio with the DSP selected was not liked. It was at this point I struck a problem. Try as I might, I could not get any sense out of the speech processor. The compression level as shown on the bar graph display would not exceed 5 dB, even with the compression control set full on. I feel this could be an isolated fault in this particular transceiver. As we will see later on, this limited the six metre performance to a very marked extent.

During the bench testing I found that the transceiver runs very very cool. The cooling fan is quiet in operation and is thermostatically controlled. At no time did the transceiver get more than lukewarm.

FT-920 On Test

First off, the transmitter power output and current drain were measured in the CW mode with 13.8 volts DC applied to the supplied DC power cable. The following results were obtained:

Band	Power Out	Current Drain
1.8 MHz	110 watts	18.0 amps
3.6 MHz	110 watts	17.5 amps
7.1 MHz	106 watts	16.5 amps
10.1 MHz	105 watts	18.0 amps
14.2 MHz	105 watts	16.5 amps
18.1 MHz	100 watts	17.0 amps
21.1 MHz	100 watts	17.5 amps
24.5 MHz	100 watts	19.0 amps
28.5 MHz	100 watts	18.0 amps
29.5 MHz	100 watts	20.0 amps
50.5 MHz	100 watts	22.0 amps

PEP output on SSB was checked on a scope under two tone conditions and found to be exactly the same, which probably says more for the power supply than the transceiver. Minimum power output, with the RF power control backed fully off, was within a whisker of five watts on all bands, which might be a fraction high for the dedicated low power operator.

Perhaps the most interesting feature of the above measurements is the relatively high current drain at 50 MHz for 100 watts output. More on that later.

Next on the list was my usual test to estimate transmitter intermodulation distortion. This was carried out at 14.2 MHz and showed -25 dB relative to 100 watts PEP output. Some quick checks on other bands showed that, while this figure improved slightly on the lower frequency bands, it did not deteriorate to any extent on the higher bands, including six metres.

Finally, power output was checked with the automatic antenna tuner in circuit feeding a 3:1 resistive SWR. On the lower frequency bands the loss was quite low, averaging around five watts, but on 28 and 50 MHz losses increased to around 20 watts. While this last figure might sound a lot, in practice it only amounts to a small fraction of an "S" point.

The transmitter frequency response tests, as usual, produced some interesting curves. The instruction manual describes the various positions as follows:

1. Mid and high frequency components are enhanced;
2. A high emphasis response is produced, ideal for pile-ups;
3. Both low and high emphasis is produced; and
4. A wide bandpass emulating a broadcast microphone characteristic.

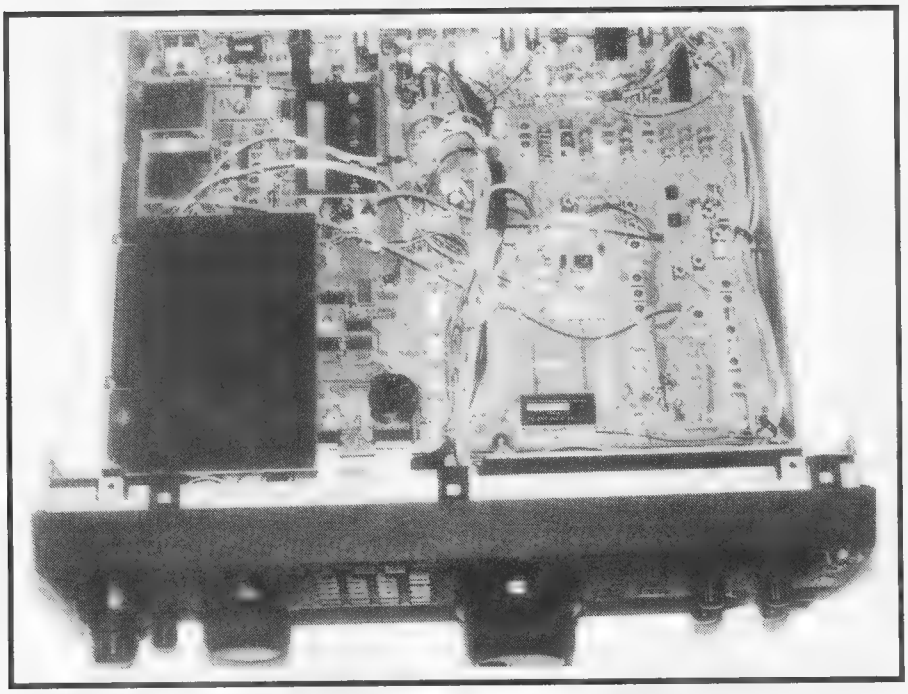
As an ex broadcast man, I cannot quite see this. In practice, use the position that gives you the best reported audio. I found that my best reports were obtained with the DSP switched off.

There are two other means of adjusting the transmit audio available to the user of the FT-920. One is via the menu system, where you can adjust the band pass relative to the filter to give slightly more or less high or low frequency response. Secondly, there is a separate adjustment for both upper and lower sideband. These are available through menu numbers U-59 and U-62.

I also note that the receiver carrier point is adjustable via the menu. An adjustment range of -300 to +500 Hz is provided for both transmit and receive. All of my tests on both transmit and receive were carried out at the default setting with no offset selected, which seemed to produce acceptable results. All SSB tests were carried out using the supplied hand microphone. I would have liked to try the FT-920 with the MD-100A8X microphone. I am sure the results would have been superb.

Receiver Tests

The first receiver test was to check the S meter calibration. The meter is not a meter in the normally accepted sense, but a bar graph as part of the big LCD. Again I have to say that I much prefer a good old-fashioned moving coil meter which gives a much more accurate indication. But, like it or not, it seems unlikely we



Underneath view of the FT-920 with the case removed.

are going to see any more old-fashioned meters.

One of the problems with bar graphs is that the segments come on and off at different signal levels. However, taking all of this into account, these are the figures I recorded:

S Meter Reading	Voltage input at 50 ohms PD
S1	1.7 µV
S3	2.0 µV
S5	2.5 µV
S7	7.0 µV
S8	10.0 µV
S9	35.0 µV
S9+20 dB	800 µV
S9+40 dB	.01 volt
S9+60 dB	.07 volt

These measurements were taken with the pre-amp switched on.

Each amateur band was then checked in turn to measure the signal input to give an S9 reading:

Band	Signal for S9
1.8 MHz	30 µV
3.5 MHz	25 µV
7.0 MHz	30 µV
10.0 MHz	30 µV
14.0 MHz	35 µV
18.1 MHz	35 µV
21.0 MHz	40 µV
24.0 MHz	40 µV
28.5 MHz	42 µV
29.5 MHz	22 µV

These figures are very consistent from band to band. They were taken with the pre-amp switched in. The pre-amp averaged about 14 dB gain although this varied slightly across the bands with slightly higher gain at the higher frequencies.

The attenuator has three positions of attenuation, 6, 12 and 18 dB, and these measured spot on. Again, could I appeal for an extra position at 24 dB to give more accurate readings of antenna gain measurements. It seems that all manufacturers have got together and chosen a maximum of 18 dB. Why?

Receiver sensitivity was measured. The measured figures easily bettered the published specification which is 0.2 µV with pre-amp on, 10 dB S/N ratio up to 24.5 MHz and 0.13 µV from there up to 54 MHz. My measurements were:

Band	Sensitivity, Pre-amp in
1.8 MHz	0.15 µV
3.5 MHz	0.15 µV
7.1 MHz	0.14 µV
10.1 MHz	0.12 µV
14.2 MHz	0.15 µV
18.0 MHz	0.12 µV
21.0 MHz	0.14 µV
24.0 MHz	0.1 µV
28.0 MHz	0.1 µV
50.0 MHz	0.1 µV

John VK3ATQ did a measurement at 14 MHz for me for noise figure and minimum discernible signal. These were a NF of 5.5 dB with the pre-amp in with an MDS of -134.5 dBm, and 10.2 dB and -129.8 dBm with the pre-amp out.

Receiver audio measurements were taken with a 4 ohm load connected to the external speaker socket. Specified audio output is 1.5 watts at 10% distortion. Our review transceiver easily exceeded this with 2.6 watts at 10% distortion. At a normal listening level of 0.5 watt, the distortion had dropped to a very creditable 0.6%.

The automatic notch filter has a measured range of 160 Hz to 3.2 kHz and is capable of reducing a heterodyne by a whopping 42 dB. Audio noise level at minimum gain was -62 dBm. Even you young fellows with acute hearing won't have any trouble with hiss or hum!

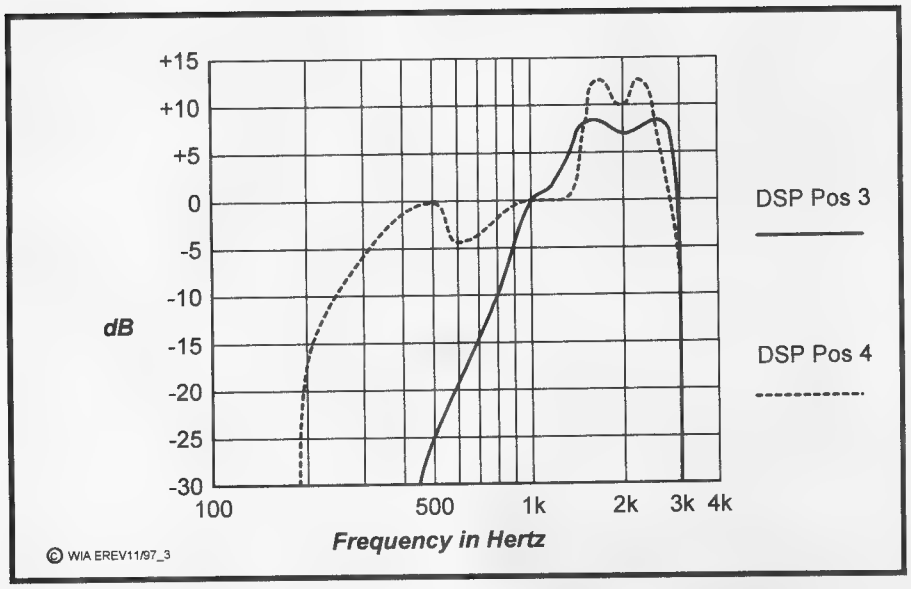
FT-920 and Six Metres

As mentioned earlier, I turned the FT-920 over to John VK3ATQ to see how performance lined up on the six metre band. John's standard of comparison is another Yaesu, the FT-650, which he describes as a better-than-average performer.

His first complaint was the lack of general coverage between 30 and 48 MHz. Serious six metre operators like to chase the MUF past 10 metres. Noise figure measurements taken at 50.1 MHz gave 4.0 dB with the pre-amp in and 13 dB with the pre-amp out. These relate to an MDS with the 2.4 kHz band width of -136 dBm and -127 dBm respectively. The noise figure of the FT-650 at the same frequency and under the same conditions measured 2.5 dB.

John found that the transmitted audio, although of excellent quality, lacked the necessary punch to get through at tropospheric propagation limits. The FT-650 was easily readable over a 300 km path where the FT-920 was not.

As noted earlier, the final current on 50 MHz was higher than expected. John suspects that this might be due to the transmitter having an output impedance of something other than 50 ohms. Putting in the ATU to compensate for this could then upset the match to the receiver and give the slightly inferior noise figure. You might find that the receiver performs



The FT-920 transmit audio response on 14.2 MHz with DSP switched to position 3 and position 4.

better with the ATU switched out on receive.

John reported that the DSP noise reduction effect was hard to evaluate. It appeared to make very little improvement, but suggested he would like more time to evaluate this. Thanks, John, for your interesting input to this review. I am hoping that John will be able to add his comments to future reviews.

FT-920 Instruction Manual

Actually called the "Operating Manual", it covers 94 pages and is generally well presented. Strangely, there are a few typographical errors. For instance, the page on phone patch operation is headed "Phone Pacth Operation". Well, I guess we even have a few in *Amateur Radio* from time to time.

Operating instructions are very well covered and there is even a full schematic diagram included together with details on the installation of the optional filters and the high stability master oscillator. Several pages are devoted to computer operation of the transceiver, which can be organised with very little trouble. You might be tempted to try it. As usual there is no technical information. Perhaps one day!

One thing I would like to see is a more durable cover to the manual. I have a feeling that the one on it will soon get dog eared.

FT-920 Conclusions

I guess the first question to ask a reviewer is, would you buy one? While I have to admit that I am not in the market for a new transceiver, if I was the FT-920 would be near the top of my shopping list for the following reasons. Firstly, and most important to me, is that this rig has excellent transmitted audio quality on SSB. I admit that I have been a Kenwood enthusiast for years for this very reason. I would put the audio quality of the FT-920 right at the top of the pile along with possibly half a dozen other transceivers some of which are not necessarily new models either.

Next, the tuning ergonomics are among the best I have ever used and certainly very superior to the main transceiver I am using at home at the moment. The digital signal processing works well and, along with an excellent noise blanker, will produce readable signals under very poor conditions.

The FT-920 is really in a class by itself and the choice boils down to whether you require a second receiver or not. I don't believe that I would. The excellent two VFO system of the FT-920 would satisfy me.

Lastly, I like the look of the FT-920. I know you cannot judge a book by its cover, but I was impressed by its looks from the first time I saw it. However, there are three negative features where I believe Yaesu missed out. The first is the omission of an internal AC power supply. Even if it was available as an option I would go along with it. The second is the non availability of a narrow SSB filter to back up the excellent DSP; also, the 500 Hz CW narrow filter might just be a bit too wide for the keen CW operator. The third is the lack of a manual notch filter. The auto notch is great but this doesn't help the CW operator.

I hear on the grape vine that there is a new Yaesu linear amplifier in the pipeline, the VL-1000. I have unearthed a few specs which you might be interested in. It covers all the HF bands and six metres. It is rated at 1 kW output (I assume PEP, and possibly CW, but maybe not FM). It has inputs for two transceivers and four switched antenna outputs, has a built-in automatic antenna tuner, and is in two units, the amplifier and a separate power supply each measuring 410 mm wide, 135 mm high and 410 mm deep. The front panel size matches the FT-920 and FT-1000MP. It will, of course, have automatic band switching when used with most current Yaesu HF transceivers.

I look forward to seeing one. Sorry, but I have no information on the price. However, with a bit of luck we should see it early to mid 1988.

Our thanks to Dick Smith Electronics for the loan of the review FT-920 transceiver. I was sorry to see it go. Dick Smith Electronics are Australian agents for Yaesu equipment. You should contact them for information on price and availability.

24 Sugarloaf Road, Beaconsfield Upper VIC 3808

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Remember to leave a three second break between overs when using a repeater.

■ Test Equipment

A Homebrew Power Meter and Attenuator Set

Drew Diamond VK3XU provides all the information to build a useful piece of test equipment*

Radio frequency power is one of those quantities that we frequently wish to measure. The usual approach is to employ a non-inductive load resistor to absorb the RF output power from a transmitter, and somehow express the voltage developed across the load in terms of power, usually at 50 ohms.

Good non-inductive resistors have become available in recent years, which make excellent loads for moderate power transmission tests (Reference 1). However, their use is rather limited to simple power measurements. On the other hand, a more flexible method is to use a fairly sensitive power meter/load for low-power measurements and, for higher power measurements, to interpose an appropriate power attenuator between the source (transmitter) and power meter (load).

Additionally, the attenuator may find use in other applications. For example, the output waveform from a 100 W transmitter may be viewed on an oscilloscope by first passing the signal through the attenuator in order to reduce the level to a more appropriate value, without risk of overloading the 'scope input. Because the attenuator simply drops the strength of the signal, a true replica is presented on the CRT (provided of course, that the 'scope has sufficient bandwidth).

The same applies to spectrum analyser measurements where, generally, the signal must be reduced to perhaps 10 milliwatts (or by 40 dB) for a 100 W transmitter. Another use is in transverter operation, where the transceiver's HF output power must be reduced before application to the transverter.

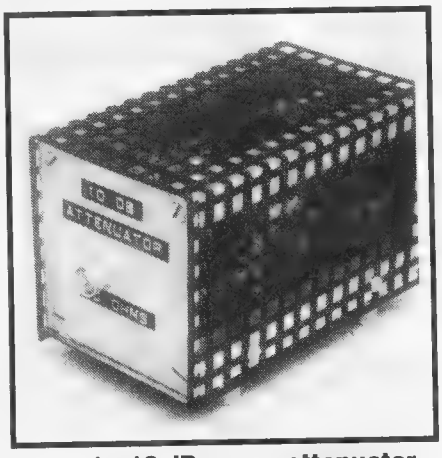

Photo 1 – 10 dB power attenuator.

By having a basic power meter/load range of 12 W full-scale (fs), and a power attenuator of 10 dB, we get a second range of 120 W fs, thus a measuring set for both QRP and moderate power work is obtained. The attenuator has the following measured characteristics:

Attenuation:	Nominally 10 dB.
Useful Frequency Range:	1.5 to 50 MHz.
Power Rating:	40 W continuous, 120 W for 30 sec.
SWR:	Less than 1.1 at HF, rising to 1.3 at 50 MHz.

The power rating needs some explanation. Wire-wound resistors are entirely unsuitable at RF due to their self-inductance. The resistors used are standard 3 W metal film types, which have satisfactorily low inductance for our purposes. When 6 W is being dissipated by a 3 W resistor in free air, the component gets pretty hot, and may even begin to discolour and smoke a little when new. However, empirically, the value remains quite stable, and no serious damage results if the overload is of short duration. Manufacturer's de-rating curves are not available, so the rating stated above has been determined experimentally.

A conventional pi configuration is used here, where (for 10 dB) about 52% of input power is dissipated in the first 91 ohm combination R1, 33% in R2, and 5% in R3, the remaining 10% reaching the load. Therefore, when (say) 100 W is applied, about 52 W must be dissipated by R1. The combined rating of R1 is only 33 W in free air, so they are somewhat overloaded. However, in practice they will withstand this overload for about 30 seconds before the components begin to show signs of stress. When the power is removed, a cool-down period of about one minute is required before power is again applied.

Attenuator Construction

A suggested pattern is shown in Photo 1. The end plates are made from 3 mm thick sheet aluminium measuring 63 x 63 mm, connected by four 100 mm lengths of square aluminium rod. Naturally, brass would also serve, if you have it. Photo 2 shows the general idea, where one rod has been removed for clarity.

The intermediate connections are soldered to cones made from thin gauge tin-plate rescued from a Milo can. This stuff solders like a dream. Dimensions of the cones are not critical, the idea is to form a low impedance connection to the coax inner at the point of the cone, and provide an anchor for the resistors around the base of each cone.

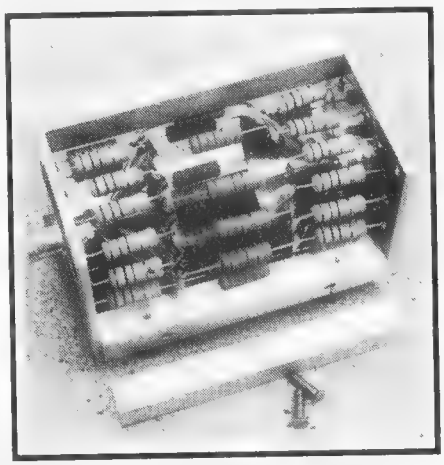

Photo 2 – Internal view of the attenuator (one rod removed for clarity).

Photo 3 – Power meter/load.

If you wish to make the cones, I suggest that a cardboard template be made first, then tried for size inside the cage formed by the four connecting rods such that 3 or 4 mm clearance is obtained all round, then use the template to make your two cones from tin-plate or brass shim. If you have never made a cone before, it provides an interesting little task. Start with a circle slightly larger than required, cut a small slice out (like a pie portion), then bring the ends together. By trial and error, a cone of appropriate dimensions will be obtained.

If desired, circular intermediate connection plates should be satisfactory, and are simpler to make, although SWR at 50 MHz may be a little higher. If used, these should be connected to the coax inner with a short length of stiff bus wire.

A circle of tin-plate is also fixed to each end plate under the coax retaining nut to provide a solderable anchor point for the "earthy" ends of the 1 kilohm resistors. Thin sheet or shim metal is awkward material in which to drill holes larger than about 3 mm, so punching, or filing to size is to be preferred over ordinary drilling.

With the cones (or plates) in position, begin tacking-in (solder, sparingly) the resistors. Start with three 1 kilohms (R1) equally spaced around the perimeter, then three 680 ohms (R2) and three 1 kilohms (R3), and so on. Filling in the gaps as you go, hopefully you will finish with all 32 resistors equally spaced, or nearly so. If crowding occurs, simply unsolder and reposition as required. When all is satisfactory, go over all the tacks with extra solder.

The cover should be of perforated or drilled sheet metal so that the attenuator (which must dissipate 90% of the transmitter's power) may ventilate during use.

Power Meter Construction

A basic full-scale power range of 12 W was chosen for two reasons. By convention, the maximum QRP power level is 5 W, which lies conveniently at exactly 0.6 on a 1 mA meter and, when used with the 10 dB attenuator, a fs range of 120 W is obtained, being the maximum permitted Australian CW power level, and equals the sort of output to be expected from a "barefoot" transceiver.

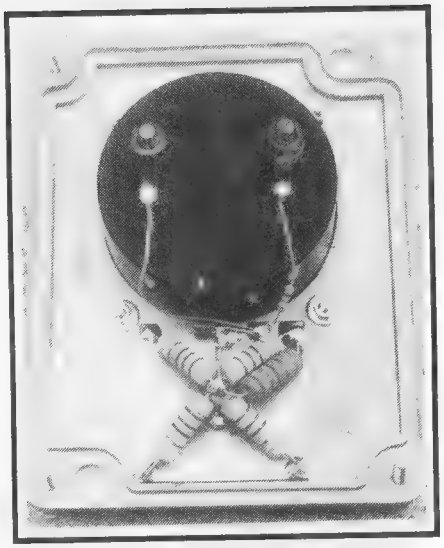

Photo 4 – Internal view of the power meter/load.

A die-cast or other metal box is an ideal housing (Photo 3). A 40 x 40 mm square of tin-plate, brass or printed circuit board is fitted under the nut which secures the coax socket, as shown in Photo 4. Four 220 ohm 3 W metal-film resistors, and one 680 ohm are soldered between the coax inner and chassis ground with minimal lead lengths as shown. The 1N914 diode, and 10 nF ceramic capacitor should also be connected with short leads. Connections to the meter terminals may be any reasonable length required. Calibration, good to 50 MHz, of a 1 mA meter is as follows:

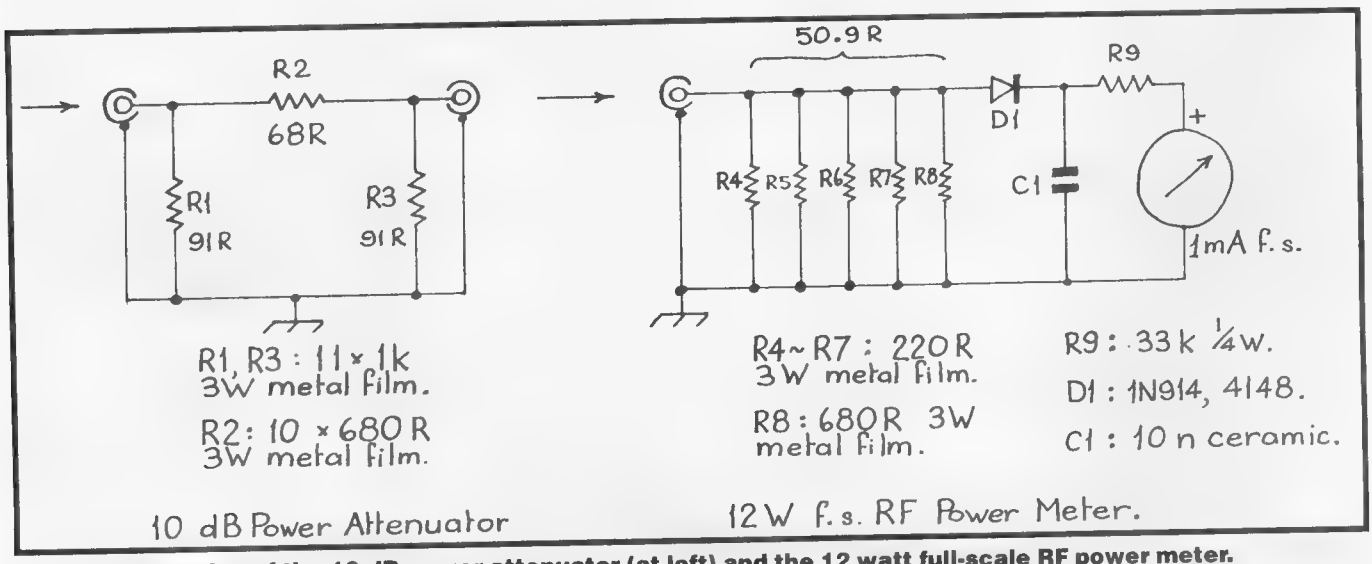

Fig 1 – Schematics of the 10 dB power attenuator (at left) and the 12 watt full-scale RF power meter.

Power	Meter
1.0 W	0.25 mA
2.0 W	0.36 mA
3.0 W	0.46 mA
4.0 W	0.53 mA
5.0 W	0.60 mA
6.0 W	0.67 mA
7.0 W	0.73 mA
8.0 W	0.79 mA
9.0 W	0.84 mA
10.0 W	0.89 mA
11.0 W	0.93 mA
12.0 W	0.98 mA

Operation

Some typical applications have already been mentioned. To measure power levels of less than 12 W, simply connect the transmitter directly to the power meter/load input. The load is adequately rated, so there is no time restriction on your measurement.

For power measurements above 12 W, connect the attenuator, using 50 ohm cables and/or adapters to suit your set up, between transmitter and meter/load. The meter will now measure one-tenth the actual power input to the attenuator. Be aware that, in order to avoid melt-down, your measurement must take place increasingly quickly as the level is raised above 40 W, to the point where, at the 120 W CW level, you have about 30 seconds to make that measurement, and for an unprocessed SSB signal, you have about double that time.

When making oscilloscope measurements, the input connector of the 'scope should be terminated in 50 ohms in order to get meaningful results. Such a termination could comprise an assembly similar to the power meter load, with coax connectors to suit your set-up. Or a second connector may be wired in parallel with the input connector of the meter/load for connection, via very short coax, to other high-impedance equipment, such as a 'scope input.

Parts

The 3 W metal film resistors were purchased from Truscotts Electronic World (03 9723 3860). Similar, but rated 2 W metal films are also available from Stewart Electronics ([03] 9543 3733). The remaining components should also be available from these two, and the usual electronic component retailers. Small quantities of aluminium sheet, perforated sheet and rod are normally available from Caplan outlets.

References and Further Reading

1. *Power Meter/Dummy Load (with notes on PEP); Diamond, Amateur Radio April 1993.*
2. *Test Equipment for the Radio Amateur; Smith, G4FZH, RSGB.*
3. *The VHF/UHF Manual; Jessop, G6JP, RSGB.*
4. *The VHF/UHF DX Book; White (ed), G3SEK, DIR Publishing.*
5. *"Building VHF Power Attenuators"; Wade, N1BWT, QEX April 1994.*
6. *"Build a Power Attenuator"; Basilier, WU7O, QST November 1996.*

*45 Gatters Road, Wonga Park VIC 3115.

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WIA News

New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of September 1997:

L21057	MR P HARROP
L21058	MR A CLINKABERRY
L21059	MR W P LECKEY
L21060	MR E J COLLEY
L21061	MR T A NOTT
L21062	MR V BLAHA
L60389	MR R G CAMPBELL-MORRISON
LF0107	MR L ZORZINO
VK2BAN	MR R PISANI
VK2CIM	MR P PRESUTTI
VK2CSS	MR G A SANGSTER
VK2HT	MR N T BOWDEN
VK2SJN	MR B HARO
VK2ZI	MR T B SAMPSON
VK3FDH	MR I DAWSON
VK3JBI	MR J CHANT
VK3MDT	MR D HASLAM
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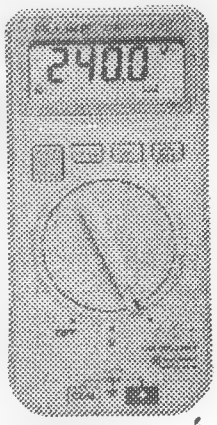

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■ Antennas

A Cost Effective Current-mode 1:1 Balun

Ralph Holland VK1BRH describes how to build a 1:1 balun.*

Introduction

A cost effective current-mode 1:1 balun can be constructed from a length of coax, a rod typically used for a broadcast antenna loop-stick, some electrical tape, cable ties, a length of PVC water-pipe, and some connectors. The balun is formed by winding several turns of coax on the ferrite rod.

Principle

The operating principle is that the inner conductor and the inside of the braid act as two opposing bifilar windings with substantial inductance inserted in the outside of the braid. Differential current passes through such a transformer with little insertion loss as the opposing windings of the transformer mode effectively eliminate the winding inductance.

If you want to run an unbalanced differential current through the transformer then substantial inductance will be present. Thus the current balun suppresses common-mode current. Since current flowing on the outside of the braid is referenced to ground, it must flow through the impedance resulting from the winding inductance formed by the outside of the braid and the core. This inductance will reduce the current if the impedance is high enough.

The same principle applies in the common-mode choke where two or more wires pass through a ferrite core. A typical example is seen in the ferrite chokes clamped on the monitor cable of computers.

High permeability cores can be used for current-mode baluns or common-mode chokes as there is no net magnetic field around the bifilar winding even though substantial currents are flowing.

Construction

A ferrite rod is easier to wind and cheaper than a toroid. At 160 m I found that I needed 30 turns of RG-58C/U to ensure that I obtained equal, but opposite, current in each leg of an asymmetrically mounted dipole. To place 30 turns you will need to wind more than one layer across the core. The turns can be held by insulation tape and by applying two cable ties on the ends of the last layer.

One end of the coax is terminated in a connector while the braid and centre conductor are split out and used as the balanced feed at the other end. You should use coax with adequate breakdown voltage to avoid damage when operating into mismatched loads.

Housing

The balun can be housed in PVC water pipe. Cut a section large enough to make two end pieces which can be flattened with the aid of the hot air from a hair-drier or heat-gun. The circular end-sections can be cut with tin-snips. I drilled a hole for a panel-mount connector in one end and used banana connectors for the balanced feed on the other end.

The end sections should be inserted inside each end of the pipe and held in place with the PVC glue. I have found hot-melt glue adequate and easily removable. Extra protection is obtained for the ends if you leave an overhang by inserting the ends further into the pipe. My balun has survived several four-wheel-driving desert trips and is still intact and operating after five years.

Reference

1. *HF Antennas for All Locations, Les Moxon, G6XN, RSGB.*

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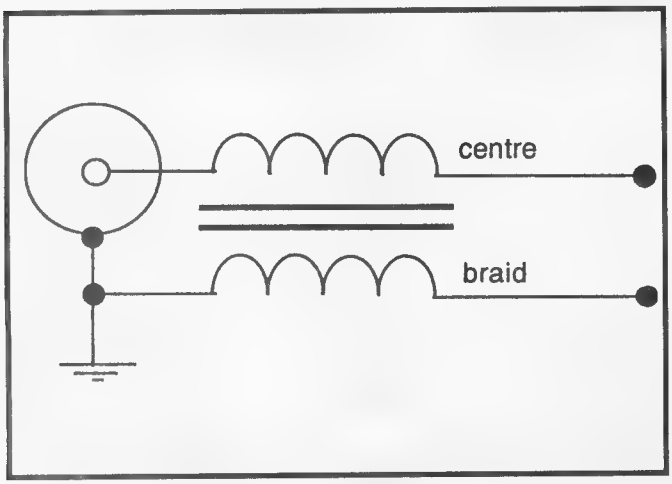

Fig 1 – Schematic of the 1:1 balun.

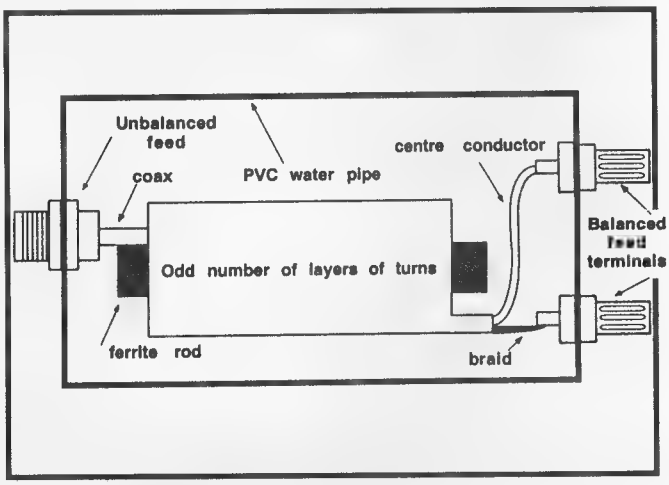

Fig 2 – Construction details for the 1:1 balun.

■ Antennas

A Cost Effective Current-Mode 1:4 Balun

Ralph Holland VK1BRH constructs a Guanella balun.*

Introduction

A cost effective current-mode 1:4 balun can be constructed from two lengths of coax, two ferrite rods, some electrical tape, cable ties, a length of PVC water-pipe and some connectors. This form of 1:4 current-mode balun is named after G Guanella.

Principle

The operating principle is based on the cross-connection of two current-mode baluns. On the low impedance (current) end, the transmission lines from each balun are connected in parallel, while on the high impedance (voltage) end the transmission lines are connected in series. Since the current is divided equally between the two separate baluns, the high impedance end sees half the current of the low impedance end and, since the voltages are also added in phase on the high impedance ends, the device obtains a 1:4 impedance ratio.

Only differential balanced currents are supported on the inside of the coaxes, while currents on the outside of the braid are suppressed. The symmetry of the balanced load can be forced by grounding the centre terminal on the high impedance end (see the optional link in Figure 1).

Ideally the transmission lines should have a characteristic impedance of half the balanced load.

I have found that this balun is superior to the normally documented voltage-mode transformer or Ruthroff balun. The Guanella balun has perfect winding or transmission line symmetry with respect to the balanced load.

Construction

It is easy to wind the coax onto the ferrite rods. Experimental data supports five turns for coverage between 3 to 30 MHz; however, if you want to operate at 1.8 MHz, I have found that about 10 to 15 turns are required. The turns can be held by insulation tape and by applying two cable ties on the ends of the last layer on each rod.

The low impedance end is terminated at a coaxial connector by taking the two centre-conductors in parallel to the centre pin and the two braids in parallel to the ground pin. On the high impedance end the top centre-conductor and the bottom braid are connected to the load, while the top braid is connected to the bottom centre-conductor – this junction can be grounded to **force** symmetry in the load.

Housing

The two balun sections can be housed in PVC water pipe. Cut a section large enough to make two end pieces which can be flattened with the aid of the heat from a hair-drier or heat-gun. The circular end-sections can be cut with tin-snips. I drilled a hole for a panel-mount connector in one end and used banana connectors for the balanced feed on the other end.

The end sections should be inserted inside each end of the pipe and held in place with the PVC pipe glue, but I have also found hot-melt glue adequate and easily removable. Extra protection is obtained for the ends if you leave an overhang by inserting the ends further into the pipe.

References

1. *HF Antennas for All Locations, Les Moxon, G6XN, RSGB.*
2. *Transmission Line Transformers, Jerry Sevick, W2FMI, 2nd Edition, ARRL.*
3. *A Cost Effective Current-Mode 1:1 Balun, Ralph Holland, Amateur Radio, November 1997, page 16.*

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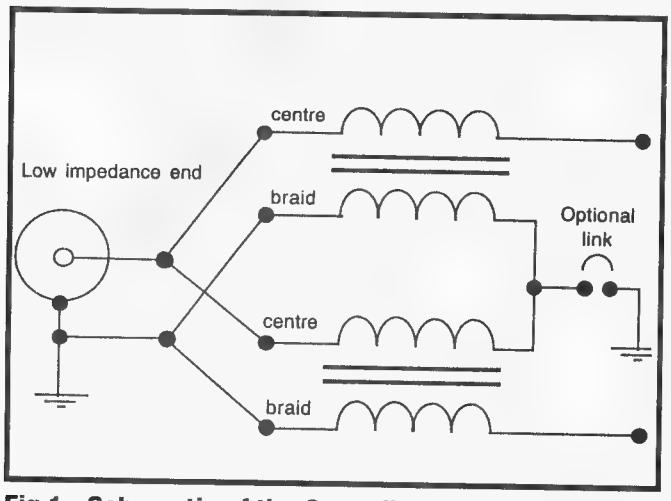

Fig 1 – Schematic of the Guanella 1:4 balun.

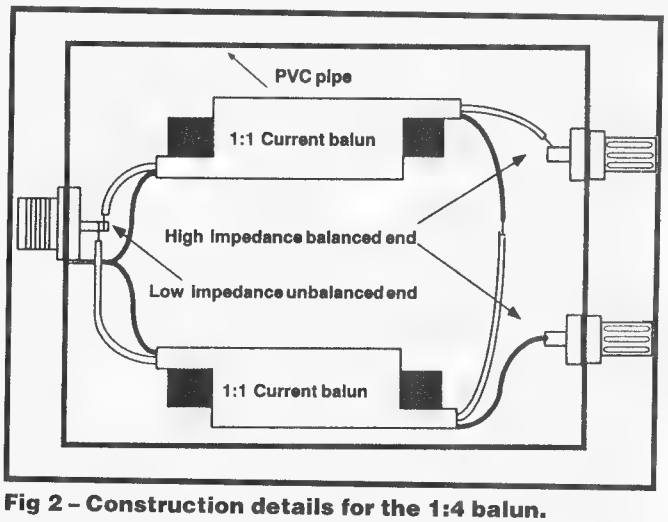

Fig 2 – Construction details for the 1:4 balun.

■ Technical

Technical Abstracts

*Gil Sones VK3AUI**

Comparison of Dual Band Hand-helds

A comparison of Dual Band Hand-helds was published in *QST*, July 1997, in which five hand-held transceivers were compared. The author was Steve Ford WB8IMY and, in addition to the features and usage data, the hand-helds were tested technically. The hand-helds tested were all purchased normally and were not special review samples. They would be representative of the sort of radio a user would obtain over the counter. This is standard for *QST* reviews and ensures that the test samples are similar to those which a normal purchaser could expect.

The performance figures obtained are given in Table 1. Some hand-helds have AM detection when monitoring the aviation frequencies below the two metre band.

The Standard is a tiny transceiver which is powered by two AA cells. Alkaline cells are normally used but Nicads could be used if desired.

Table 1 Dual Band Handheld Transceiver Test

		Alinco DJ-G5TH	Icom IC-T7A	Icom IC-W32A	Standard C508A	Yaesu FT-50R
Rx Sens dBm for 12 dB SINAD	146 MHz	-124 (L) -124 (R)	-124	-124 default -123 opp	-124	-124
	440 MHz	-124 (L) 124 (R)	-124	-125 default -124 opp	-122	-124
Rx AM Sens	120 MHz dBm	-116	-108	-112	-118	-114
Two Tone 3rd Order IMD	146 MHz	67 *	61	57	51	55
Dynamic Range dB 20 kHz Spacing • Noise Limited	440 MHz	65 *	58	58	55 *	54
Adj Channel Rejection	146 MHz	63	65	64	59	51
20 kHz Offset dB	440 MHz	55	62	62	55	51
Mute Sens dBm	146 MHz	-127	-125 AT -121 SQ	-125 AT -121 SQ	-125	-126
	440 MHz	-129	-125 AT -121 SQ	-125 AT -123 SQ	-123	-131
Rx Af OP mW into 8ê 10% Dist		281	259	218 AA alk cells	99	530
Tx Pwr Watts Std Batty	146 MHz	5.5/1.2 /0.2	2.5/0.6	5.5/0.5275 mW AA Alk Cells		5.7/2.7 /1/0.1
	440 MHz	5.4/1.2 /0.2	2.2/0.5	5.1/0.7270 mW AA Alk Cells		5.0/2.6 /0.9/0.1
Tx Pwr Watts 13.5/13.8V	146 MHz	5.9	4.9	5.6	—	5.1
Ext Supply	440 MHz	6.5	3.5	5.4	—	5.4
Tx Rx Turnaround Time PTT release to 50% Full Audio m/S S9 Sig V	146 MHz	200	110	118	140	65
	440 200 MHz	110	110	140	65	
Rx Tx Turnaround Time ("Tx Delay") m/S	146 MHz	105	92	88	85	7
	440 MHz	110	115	92	90	12

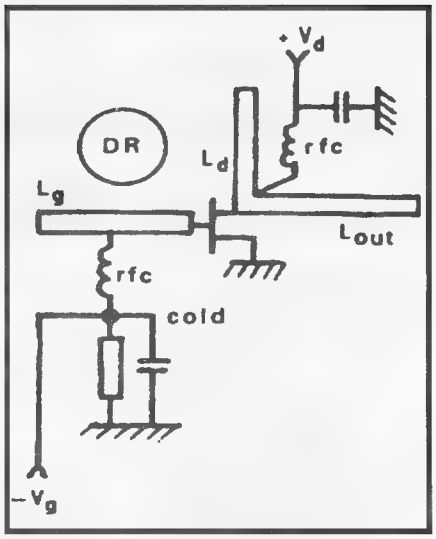

Fig 1 – DRO with Gate side cold point.

The Yaesu and the Standard use an SMA antenna connector which means you will need an adapter to use an external antenna. The Alinco and the Icoms use a BNC antenna connector.

The figures do need some interpretation. Sensitivity is quoted in microvolts and has been converted into dBm. Sensitivity is not the sole indication of good performance. Intermodulation has a great bearing on the ability to receive signals. The disturbance experienced from adjacent services is a frequent cause of complaint.

Some hand-helds have two receivers which both cover VHF and UHF. One combination sometimes is of greater sensitivity or is preferred. This is noted as left or right, or as default and opposite in

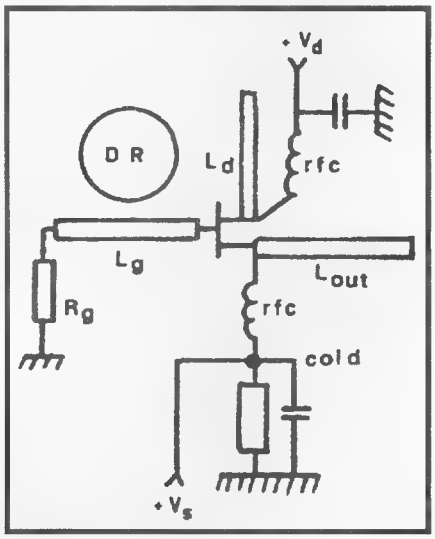

Fig 2 – DRO with Source side cold point.

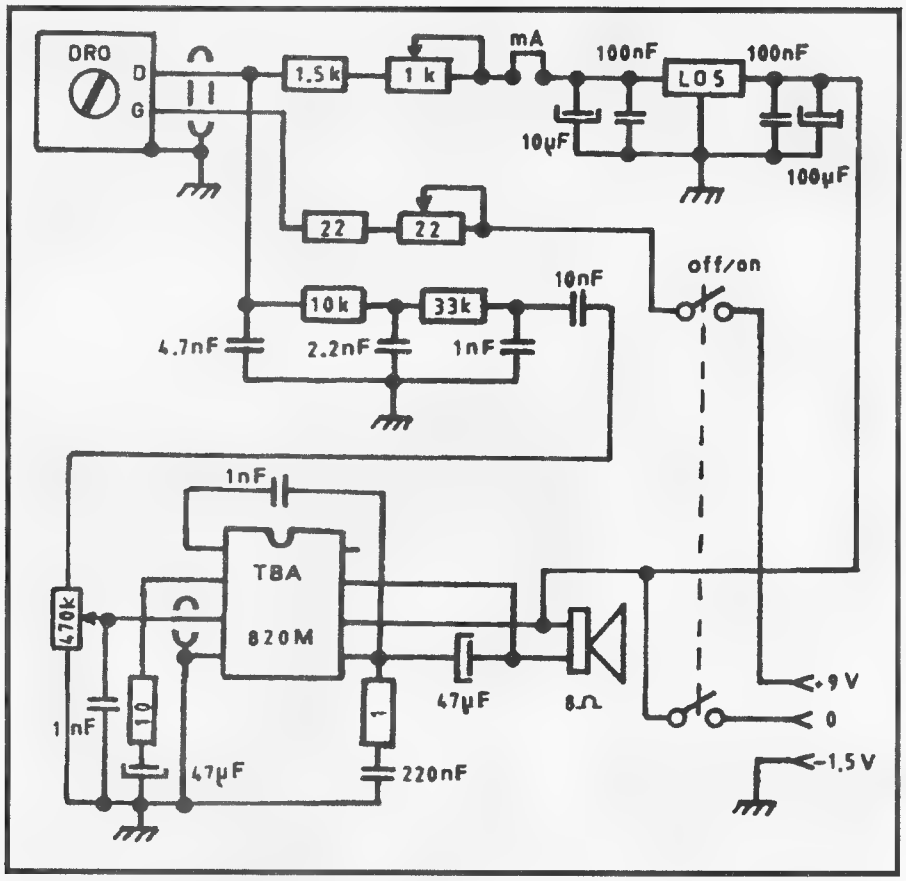

Fig 3 – 10 GHz Regenerative Receiver.

Table 1. Similarly, pre-set mutes are often used and, where alternatives are provided, these are identified by AT and SQ.

All the hand-helds tested have intermodulation performance which could be improved. The radio should be designed for operation in today's RF environment. The problem of strong signals from services in adjacent bands is not solely an Australian problem. The paging service is, however, marginally further away in some other countries.

The turnaround time gives some indication of the delay between transmit and receive. This is of importance to packet users and determines some of the TNC parameters. The major factor in these times is the settling time of the Phase Locked Loop. The PLL must stabilise before data is passed after each transition between transmit and receive.

10 GHz Super-Regenerative Receiver

The super-regenerative receiver is still used in many applications and it offers a simple receiver design. In *VHF Communications* for January 1997, Andre Jamet F9HX describes a 10 GHz super-regenerative receiver. The design makes use of a Dielectric Stabilised Oscillator, DRO, converted to operate as a super-regenerative receiver.

A DRO is often used as the conversion oscillator in satellite TV LNBs and these can often be found surplus. This is particularly so in Europe and the UK with the many changes in satellite broadcasting. They are sometimes available here.

The DRO uses a ceramic dielectric resonator as the stabilising element. Typical circuits are shown in Figs 1 and 2. The resonator needs to be moved onto frequency for the 10 GHz band. Andre Jamet F9HX recommends moving the resonator up by abrading it with sand paper. He found it possible to move a 9.75 GHz resonator onto the 10 GHz band. After altering the frequency it is recommended to stabilise any components which have been stressed by carrying out one or two ageing cycles. An hour or so in an oven at 40 degrees C is the recommended cycle.

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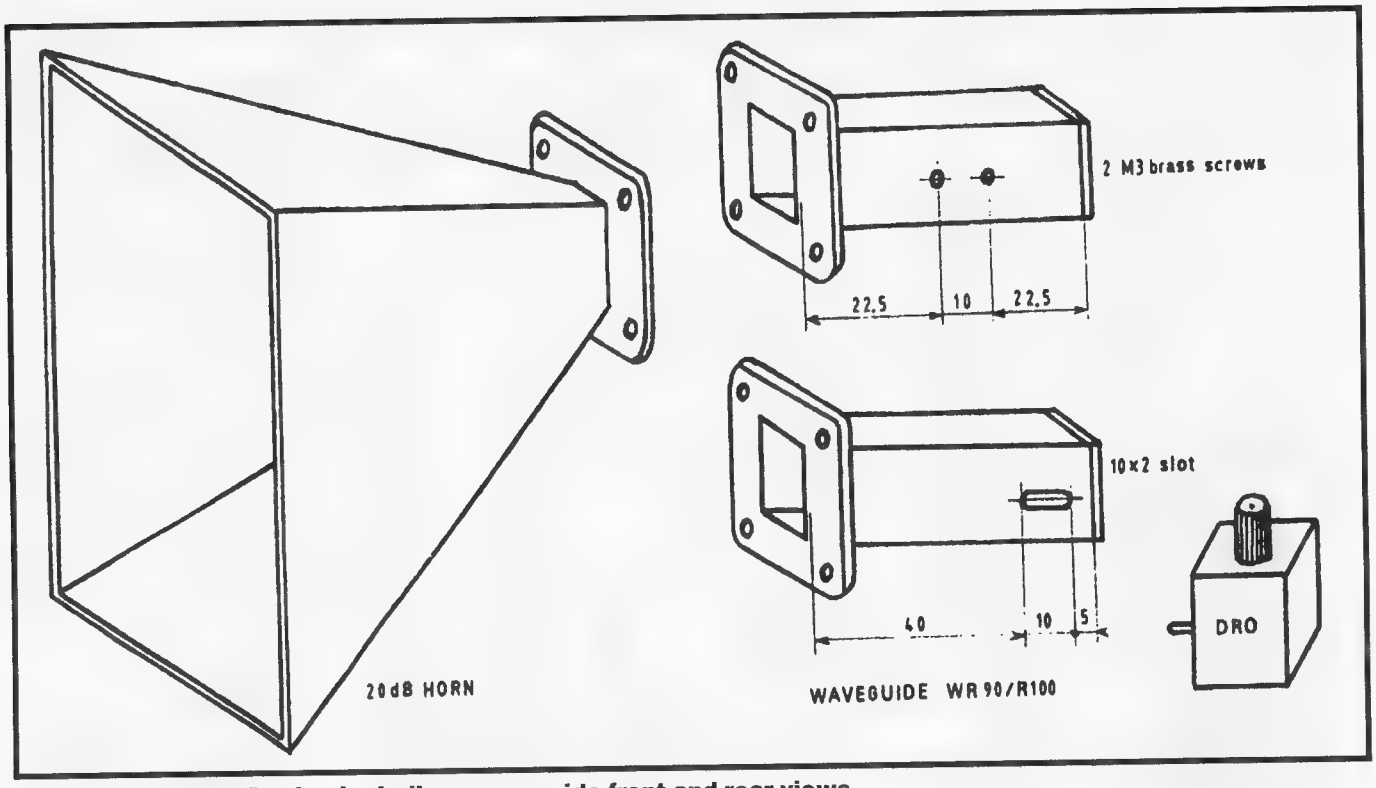

Fig 4 – Mechanical Design including wave-guide front and rear views.

Converting a DRO to a self-quenching regenerator is accomplished by adding a resistor into the drain circuit to pick up the audio output and to produce the quenching oscillation. The operating point is controlled by varying Gate-Source voltage and is quite critical to obtain best super-regenerative performance. The circuit used is shown in Fig 3. The 1.5 volt negative supply was required as the DRO used needed a negative gate-source voltage.

The DRO must be extracted from the LNB. This was accomplished by sawing it out. This resulted in the DRO being extracted as a small box which had been sawn out of the LNB. The receiver construction is shown in Fig 4. The DRO is placed against a slot in the piece of wave-guide. A small piece of Teflon insulated wire removed from a scrap of coax is connected at the DRO output and is used as a coupling probe into the wave-guide. The DRO can be moved about along the slot in the wave-guide to find the optimum position. It can then be fixed in position. A couple of tuning screws, as shown in Fig 4, assist with matching. A scrap of plastic biro case was glued to the head of the DRO adjusting screw to assist with tuning.

The waveform at the Drain Cold point is shown in Fig 5, showing the quenching oscillation. The super-regenerative receiver spectrum is shown in Fig 6.

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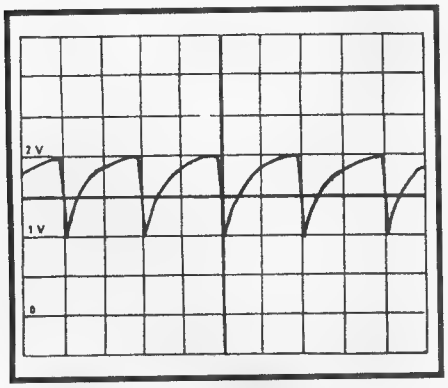

Fig 5 – Drain Cold Point Waveform.

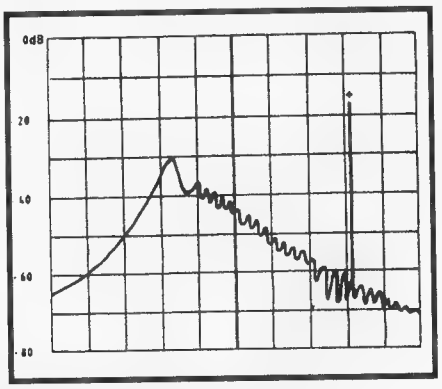

Fig 6 – Super-regenerative Receiver Spectrum.
Scan Width 2 MHz/div.
Scan time 0.5 Sec/div.
Bandwidth 10 kHz.
Plus received signal at analyser input.

Help stamp out stolen equipment – always include the serial number of your equipment in your HAMAD.

Women in Radio – Mothers and Daughters

Christine Taylor VK5CTY presents another article in her series on women in amateur radio.*

(l to r) Linda Luther VK5QP (ex VK4VV), Denise Robertson VK5YL, Joy Charles VK5YJ and Myrna Marnie VK5YW at the luncheon held at the Old London Tavern in July 1985 to mark the 10th anniversary of the founding of ALARA.

While most YLs take up amateur radio because their brothers or, more often, husbands are interested in the hobby, there have been a number of mother and daughter amateurs in Australia, almost from the earliest days of amateur activity.

The earliest pair were Elizabeth Hutchings VK3HM and her daughter, Marjorie Williamson VK3HQ.

Elizabeth VK3HM became involved through the interest of her son, Allan 3HL, later VK3HL. Marjorie was the first VK3 YL to transmit. She obtained her licence in 1929 and on Christmas Eve that year she exchanged Christmas Greetings with at least one station in each continent. She then sat up late into the night to make a contact with an amateur in England, just to put the icing on the cake.

She built a receiver and a transmitter in 1930 which were shown at an amateur radio exhibition in Melbourne. The antenna was a Zepp wire aerial about 50 ft (over 17 metres) high with which she could operate on 80, 40 and 20 metres.

Young Marjorie thought that two amateurs in the family were enough until one day she was invited into the shack (next door to the living room) to "listen to this music from an American station". She donned the earphones and started twiddling the knobs. She was hooked!

She was so frustrated that she couldn't understand the Morse Code that she set out to learn it. This was followed by the theory and eventually Marjorie sat for and passed her exam in 1932.

Mother and daughter shared the rig and made many friendships through amateur radio till they had to seal their equipment in 1939 because of WW II.

Unfortunately, Elizabeth VK3HM died suddenly in 1943 and, although Marjorie VK3HQ never set up another station, she has never regretted her interest in the hobby and never lost the friends she made.

Hebe VK2AOK obtained her licence in 1964 after encouragement from her husband Dick VK2AZG and his friends, and became very active in the DX field. She made many friends overseas and entertained many of them in her home in Sydney.

She was active within the WIA and ran a number of Nets at different times, including the South East Asia Net from Dural and a Macquarie Island Net from her home.

Hebe and Dick had two daughters and two sons who obtained licences. Jean, now VK4FUL, was in New Guinea when she passed her exam. She had the call P29OK, and also held her mother's old callsign for some time, simultaneously. The other daughter Dia became VK2YTH, John took the callsign VK2ZJD and Richard VK2BGW. Potentially there could have been six demands on the rig at once!

Brenda VK3KT (VK3 Division Federal Councillor, and Federal Education Co-ordinator) gained her licence in 1960 as a result of the activity of her husband John VK3AFU/ATG with the Rural Fire Brigades in the Victorian Wimmera area. Their two daughters, Brenda VK3QT and Vickie VK3LT, gained their licences in the 70s, along with Brenda's two sons, Charles VK3AFV and Alex VK3BQN. The whole family was licensed! In 1983, Brenda VK3QT married Paul VK3DIP, and Vickie married John VK3CU. It is expected that the next generation will proceed to gain licences in due course.

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(l to r) Norma VK2YL, Jenny VK5ANW and Marilyn VK3DMS.

Are there any instances of three generations of women operators?

There are at least three other mother and daughter combinations who came on air since the 70s when the Novice licences were introduced.

We have Jean VK2NFS and her daughter Barbara, who was very active as V85BJ from Borneo a couple of years ago, and is now quiet until she has a chance to get some aerials up in the air, as VK4GTX. Barbara entered many contests and participated in many Nets from Borneo. No doubt she will take up some of those activities once she has something up in the air again.

Norma VK2YL, who was the first President of ALARA as VK3AYL, has a double claim to fame. She is daughter of Rae VK3VUK (now VK3AYL), and daughter-in-law of Bobbie VK2PXS.

Norma obtained her licence as VK3AYL when she was still at university and wasn't much older when she became President of LARA, the forerunner of ALARA. After her marriage to Frank VK2AKG, she moved to VK2 and took the callsign VK2DJO, which she later changed to VK2YL.

Norma, Rae and Bobbie were all flown to the first ALARAMEET in Mildura piloted by Frank and his brother. Norma also holds a pilot's licence though she probably doesn't have much chance to use it now as she and Frank have three daughters to compete with amateur radio and flying.

Joy VK5YJ is another YL who first took out a Novice call before upgrading; but she had an easier task than her daughter Joyanne did (she attended classes and her OM, Ted VK5YQ, was there to advise and encourage). Joyanne was living on the Ernabella Settlement when she decided she would try to get her licence so she could talk to her parents on the air.

She studied through the standard books on her own. When she was ready to attempt an exam she flew to Adelaide to sit for it and flew back again. Joy cannot remember how many attempts it took Joyanne, first to pass the Novice and then to upgrade, but there were a number. She holds her callsign VK5BJA with pride.

Joy's son Kim also has a licence. He took the callsign VK5KIM at first, but Ted asked him to take his old call when he knew he was very ill, so Kim is now VK5YQ. To complete the family set, Joyanne's husband Graeme now has the callsign VK5ZGE but has never used it on air.

If anyone knows of other pairs that have been missed, please accept my apologies and let me know about them.

**16 Fairmont Avenue, Black Forest SA 5035*

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QSP News

Honorary Life Membership for Murray Burford VK5ZQ

Here is a brief account of some of the history of this man, a long time member of the Wireless Institute of Australia, South Australian Division.

Apart from being an active amateur radio operator for many years, Murray has made an ongoing and constant contribution to our hobby.

He has taken an active interest in Institute affairs and previously served as a member of Council and also as a Divisional President. Murray has been involved with the weekly news broadcast since as far back as 1964 and has acted as an operator for VK5WI as well as relaying the broadcast from his own station.

Since the early 1970s, Murray has been involved in the education of new "amateurs" and is currently the instructor for the course run by the Division at the Burley Griffin Building.

Around six years ago Murray took on the production of the Divisional News Broadcast and has consistently continued to carry out this function over that period of time. I can assure you that to regularly produce the broadcast on a weekly basis over such a period is certainly no mean feat.

I am very pleased to announce that, following a suggestion received from a member and based on a recommendation from the Divisional Council, the members at the September General Meeting voted unanimously to confer upon Murray the privilege of Honorary Life Membership.

It is proposed that Murray be presented with his Honorary Life Membership Certificate and badge at the November General meeting of the Division.

On behalf of all members of the Division I have great pleasure in offering congratulations to Murray Burford VK5ZQ on his fine achievement and wish him well in his further activities in this great hobby.

Ian J Hunt VK5QX
VK5 Division President

ALARA

Sally Grattidge VK4SHE, ALARA Publicity Officer*

North Queensland Convention

The North Queensland Amateur Radio Convention was held in Townsville in September and, as usual, a number of YLs enjoyed the weekend. Seen at the Convention were Mary VK4PZ from The Caves near Rockhampton, Jocelyn VK4JJ from Bundaberg, Merrell VK4HAJ from Seaforth and Ann VK4MUM, Pat VK4MUY, Evelyn VK4EQ, Sally VK4SHE and Jeanette VK4AZL from Townsville. Also there were Eleanor, XYL of VK4ZT; Hazel, XYL of VK4CAU; Sheila, XYL of VK4IGM; Linda, XYL of VK4RB; Lyndall, XYL of VK4ZZ; Betty, XYL of VK4AGZ; Dorothy, XYL of VK4DO; Joan, XYL OF VK4QF; Gay, XYL of VK4APQ; Annette, XYL of VK4CD; Dianne, XYL of VK4HAI; Noelene, XYL of VK4OB; Jeanette, XYL of VK4WJ; Sharon, XYL of VK4NEF; Teri, XYL of VK4MC; Kay, XYL of VK4ACC; Nuriti, XYL of VK4YIT; and Suzanne, Roslyn and Judy. I have a feeling this list is incomplete, so apologies to anyone I have left out.

Special guests were the operators from the Willis Island DXpedition, including three YLs, Noriko Tokura VK9WY and 7K3EOP; Elvira Simonani VK9WY, VV3FSG and VK4BES; and Ann Santos VK9WY, VK4AMS and J38AA. Your intrepid reporter had great plans to interview these ladies and get an exclusive story but, alas, did not do her homework. I discovered, when things had settled down a bit and there was time to sit down and talk, that they had not planned to stay for the whole weekend and it was too late – the birds had flown.

The Convention was held at James Cook University and opened with a meet and greet get-together, catered by the local YLs.

The ALARA table was on display, and the usual ladies home-brew with a fascinating assortment of crafts (one curious item was submitted by an amateur who has never been seen wearing a skirt – maybe we should check the rules on that...). Evelyn VK4EQ took first prize, Lyndall second prize, and Noelene third prize.

On the Saturday morning a craft session took place under the expert guidance of Dianne, daughter-in-law of Pat VK4MUY. YLs were asked to bring a plain white T shirt to decorate. After some initial hesitation, several masterpieces began to evolve, as paint, glitter, stars, moons and leaves turned boring white shirts into unique fashion items. All who took part were surprised at how easy it is to produce something quite professional.

After lunch at the University (student style), the ladies boarded a bus driven by Bob VK4WJ, and proceeded to the Maritime Museum where Townsville's history connected with the sea was revealed. Some of the more adventurous tried on a diver's helmet which is so heavy it has to be lowered onto the shoulders by a frame resembling a guillotine. This visit was followed by afternoon tea in the garden of Judy's daughter, Jewell. This garden is one of the first in North Queensland to be in the Open Garden Scheme. Mainly palms and deliciously shady in the afternoon heat, the garden really shows how an average house block can be transformed into something special.

Saturday night was a buffet dinner at Tumberton Lodge, which is an old restored building in the Palmetum gardens. Balmy tropical breezes wafted in through open windows and doors, and no mosquitoes (wonder how they did that!). The famous "amateur hour" returned by popular request, and the local YLs' rendition of "Three Little Fishes" actually won the prize (I didn't think the others were that bad).

On Sunday morning the ladies visited the Cotters Market in Flinders Mall, where most managed to find a souvenir or two, before returning to the University for a barbecue lunch, presentations, and a relaxing chat under the trees, while the OMs squandered the family fortune at the famous auction.

Around the Traps

Gwen VK3DYL congratulated CLARA on their 30th birthday on behalf of ALARA when she attended the CLARA GALA in September.

"Our" Mrs Mac (Florence Mackenzie) has been in the news again in *Electronics Australia*, featured in a piece about the founders of "Wireless World"

Maria VK5BMT is an official observer of garden birds, and is busy documenting what birds visit her garden, and when and how often.

Marilyn VK3DMS and OM Geoff VK3ACZ were in Adelaide for the Stampex, and joined Jean VK5TSX, Tina VK5TMC, Jenny VK5ANW and Christine VK5CTY for an impromptu dinner.

While in VK4, Meg VK5AOV and OM David met Val VK4VR and Brian, but missed seeing Bev VK4NBC as she was visiting her OM Graham VK4BGC in hospital. Graham has not been at all well lately and we all hope he will recover soon.

Judy VK3AGC has also been in hospital. Judy, who broke her wrist a year ago shortly before setting out for Perth to go to the ALARAMEET, has had trouble with it ever since, so has returned to hospital to have it re-broken and reset. We all hope you get the improvement you are hoping for, Judy.

**C/o PO Woodstock, QLD 4816*
Tel: 077 788 642
Packet: VK4SHE@VK4RAT.#NQ.QLD.AUS.OC
Internet e-mail: rgrattid@ozemail.com.au

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WIRELESS INSTITUTE OF AUSTRALIA

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WIA News

Amateur Radio on the Space Station – Official

The American Radio Relay League (ARRL) reports that amateur radio will be an official payload on the International Space Station (ISS), construction of which is scheduled to commence in 1999, in orbit.

According to the *ARRL Letter* for 26 September, Matt Bordelon KC5BTL, at the Johnson Space Center, said ham radio was the first payload to become official.

The ISS Payload Office is reportedly listing amateur radio onboard the space station as a transportable station in the form of hand-helds, as a site on the EXPRESS pallet, and as a permanent station on the space station's Habitation Module.

[Released 7/10/97]

AMSAT Australia

*Bill Magnusson VK3JT**

National co-ordinator
Graham Ratcliff VK5AGR
Packet: VK5AGR@VK5WI
E-mail: vk5agr@amsat.org
AMSAT Australia net:
Control station VK5AGR
Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.
Frequencies (again depending on propagation conditions):
Primary 7.064 MHz (usually during summer).
Secondary 3.685 MHz (usually during winter).
Frequencies +/- QRM.
AMSAT Australia newsletter and software service
The newsletter is published monthly by Graham VK5AGR. Subscription is $30 for Australia, $35 for New Zealand and $40 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:
AMSAT Australia
GPO Box 2141
Adelaide SA 5001
Keplerian Elements
Current keps are available from the Internet by accessing the AMSAT FTP site, *ftp.amsat.org* and following the sub-directories to "KEPS".

Some Details of the Receive Requirements for TMSAT 38k4 Downloads

Surrey University recently outlined the receiver necessary for the 38k4 baud downlink on TMSAT which is due for launch later this year. As expected, the requirements are quite a deal more stringent than for 9k6 baud and will mean more than a simple work-over of the station receiver as is the case with 9k6 baud. The following text has been abbreviated from a message as received via the Internet from Chris Jackson G7UPN/ZL2TPO. Chris is UoSAT Ground Station Manager at Surrey Satellite Technology Limited. The original message is too long to include in this column in its entirety.

Introduction

With the launch of TMSAT-1 scheduled for later this year the radio amateur community will be able to obtain data from some of the most advanced imaging and frequency analysis payloads available to date. The satellite's advanced imaging payload comprises three narrow angle cameras, a wide angle camera and transputer, providing the ability to generate false colour satellite imagery. This increase in payload sophistication, however, has a price, that being the immense amounts of data generated by the payload. A single uncompressed image is in the order of 3.3 Mbytes in size.

The 38k4 Modulation Scheme

The 38k4 baud modulation scheme employed on TMSAT-1 is similar in principle to that of the existing UoSAT 9600 CPFSK modulation scheme used on previous UoSAT missions. The only alterations are pulse shape roll off factor and some of the filtering.

Receiver Description

The differences between this and the previous 9600 baud system are:

1. All filter bandwidths require expanding to allow for the larger bandwidth received signal.

2. The crystal band pass filter needs to have a sufficiently wide bandwidth, a minimal pass band ripple, but extremely steep skirts so as to absolutely band limit the IF chain.

3. The frequency discriminator is required to be linear over its full operating range; non-linearities will cause degradation to the received signal.

The preferred line of action would be to modify the existing 9600 baud receiver and demodulator since any existing Doppler tracking and receiver control already in place for 9600 baud operation could still be used. The filter selected for the SSTL ground station is an 8-pole Butterworth crystal filter, BW@ -3 dB = 65 kHz, extremely steep skirts, and minimal pass band ripple. So far, no-one has reported a successful modification of existing gear using this filter. They are quite expensive but they represent the minimum requirement for successful 38k4 operation.

G3RUH 9600 Baud FSK Modem modifications

Only the demodulator circuitry is required, and modifications are required to the receive filter and the output DAC circuitry. The receive audio is fed into the receiver filter via a small amplification stage. The signal is filtered, unscrambled and then passed onto the SSTL modem interface card for level shifting.

Conclusions

Whilst the change from the existing 9600 baud data rate to the new 38k4 data rate will initially pose a problem, the implementation of such a receiver will provide a reward in terms of access to the new images and faster store and forward communications. Currently, no off-the-shelf solutions exist; this, therefore, provides an excellent technical challenge in the implementation of the receiver.

At the time of writing, the above sounds like a fairly expensive project. Surrey have indicated that a suitable commercial receiver is available. Once again, this would be an expensive way to go and Doppler tuning would still need to be addressed. My feeling is that this approach will appeal initially to those among us with a good grasp of communications electronics (and a pronounced sense of adventure). Perhaps some of the Gurus are already working on modifications to the existing range of amateur gear already on hand in most satellite user's shacks. This would open the project to a much wider audience. More on this one as it comes to hand. Updated information is available on the Internet at: *http://www.ee.surrey.ac.uk/CSER/UOSAT/amateur/38k4_receiver_paper.html*

Worth Remembering

This is part of the text of a message from Chris G7UPN in reply to a question put to him on UO-22 recently. It's worth passing on. I hope readers will appreciate just how fortunate we are to have access to these satellites. The questioner asked, "*How come private commercial companies give their satellites to amateurs?*" He was referring particularly to the new TMSAT satellites.

Chris replied, *"This is a similar arrangement to UO-9, UO-11, UO-14, UO-15, UO-22, KO-23, KO-25... All of these satellites are 'owned' by someone (either UoSAT, or KAIST). Generally these organisations are interested in educational aspects of space as well as developing for themselves experience with building and operating spacecraft. Mostly, these organisations are connected to universities (similar to UoSAT/SSTL being connected to the University of Surrey). The Thai company is connected to Mahanakorn University in Bangkok. They aren't exactly 'private' companies.*

Amateur operators will get full access to a couple of excellent satellites in the next six months that would otherwise not be available to them. The imaging capabilities of these satellites will be better than anything else presently available on amateur radio satellites, and the 38k4 downlink will give people something new to work with". Well said, Chris.

Were it not for the fact that we have amateur radio contacts in these Universities and the heroic pioneering work of people like Prof Dr Martin Sweeting, the transponders and beacons of the satellites mentioned above would never have graced the amateur

radio bands. The best way we users can support these people who have supported us so well is to get behind the amateur organisations and, in particular, the amateur radio satellite organisations, with our membership.

Keeping Track of the Geo-stationary Satellites

A recent article in *Wireless World* caught my attention. It described a new approach to the way commercial earth-stations keep track of geo-stationary communication satellites. It set out the major cost savings that could be achieved with the right tracking system. What's that I hear you say? *"I thought geo-stationary meant NO tracking"*.

Well, in amateur radio terms and using amateur built antenna systems, that may be true. Commercial installations can involve dishes of maybe 10 – 20+ metres diameter and frequencies of tens of GHz. This equates to beam-widths which are measured in minutes of arc. Such dishes require the very best engineering to maintain rigidity and they need to track the satellite. Geo-stationary satellites may appear to hang in the sky but none will have a truly equatorial orbit. Neither are their orbits perfectly circular. In practice they will have a small inclination and eccentricity and consequently they will "move about a bit" to an observer. They, in fact, trace thin ellipses that drift slowly around the orbital path. Not enough to worry an amateur installation but more than enough to require the large dishes to keep them centred in the beam.

The article reviewed several systems that are in use to combat this problem, some quite costly. For the want of a simpler explanation, many of these systems use a sort of servo system where information fed back from the satellite is used to track the dish and also to keep the satellite in its allotted "window". Accurate tracking using this method is difficult to maintain, particularly at times of high ionospheric activity or when the satellite is directly in line with the sun. Power outages can also cause the system to lose lock. The article claims that tracking systems which rely on the strength of the received signal to generate the tracking error can easily be fooled by scintillation fading.

The new approach does not attempt to track by any sort of feedback. It uses a super accurate mathematical model of the satellite orbit, similar in a way to our tracking method using "keps" but orders of magnitude more accurate. It appears that the actual position of the satellite can be determined far more accurately by this method than by any sort of feedback system. The cost savings are achieved by being able to have backup systems in place at the earth-station and by being totally independent of power outages, fading, eclipses and other natural phenomena. The tracker will always know precisely where the satellite is and be able to keep the antenna right on track.

Why bother? Commercial data is a costly commodity and cost savings are expected to top the one million dollars per year mark by using such a system. In addition, there's the customer's image of the provider's reliability and that can make the difference between a renewed contract and an ex-customer. How lucky we are not to require this order of accuracy to track our little OSCARs.

SPUTNIK Replica

By the time you read this, the 40th anniversary SPUTNIK replica should be in orbit. It will be known as RS-17 when it is operational after being hand launched during a space walk by a MIR Cosmonaut on or about 3 November 1997. Look for its signal around 145.820 MHz plus/minus Doppler. SPUTNIK PS-2 is a one-third scale model of the original SPUTNIK. Its transmitter will broadcast "beeps" similar to SPUTNIK-1. I described it more fully in the August 1997 column. Be quick, though, as the replica is using battery power and, like the original, has no charging capability. It has a design life of one or two months. It should stay close to MIR for some time after launch.

**RMB 1627, Milawa VIC 3678*
E-mail: vk3jt@amsat.org

Awards

*John Kelleher VK3DP - Federal Awards Manager**

CIS Awards

On 1 January 1992, after a period of about 75 years, the USSR ceased to exist. The Commonwealth of Independent States (CIS), which is the successor that replaced the USSR, is a loose confederation of Russia, the Ukraine, Belarus and a few, but not all, of the previous countries.

The political upheaval that followed is sadly taking a serious social and economic toll on the average amateur/SWL as the move to a market-based economy has disrupted many aspects of Russian life. The freeing of the ruble from its non-convertible status to a devalued currency has not helped.

One of the bad side-effects of these historic events is some disruption to mail services. Not all mail that enters the country is delivered, especially if it comes from overseas and looks as though it might contain valuables that could be traded for ready cash, ie currency/IRCs.

The Russians know that it is happening. They have written warnings about this. They've complained to the Postal officials openly. Then what do we do about those colourful and interesting Russian awards? Here are some tips, not necessarily in order of preference.

1. Write in advance. Ask if the award is still being offered, and if the sponsor has made special arrangements with an associate in a "safer" country to receive the fees.
2. Get a supply of the European-sized letter envelopes. Foreign non-standard envelopes are too prominent.
3. Don't use colourful stamps – this may attract the wrong kind of attention.
4. We know it's expensive, but use registered mail wherever possible.
5. Wrap IRCs or currency in carbon paper cut to the exact size of the envelope.
6. If all else fails, defer your application for the award until the situation improves or is clarified.

Canadian Ladies Amateur Radio Association Awards

General requirements. GCR accepted. Apply to Kathy Hrischenko VE3GJH, 56 Stockdale Crescent, Richmond Hill, Ontario L4C 3S9, Canada.

CLARA Certificate

CLARA members work 12 YLs in six Canadian call areas (limit five VE3); other YL or OM operators in Canada work 10 YLs in five call areas. DX stations, including USA, work five YLs in three call areas. All bands. Contacts after 12 September 1972. Endorsements available. Fees VE and USA $3.00; all others $4.00.

CLARA Ten DX Contacts Certificate

Work 10 YLs in different countries. Use an approved DX country list. Open to all YLs and OMs. Contacts after 1 January 1990. Fee is $2.00 and a copy of your log sheet.

YL-DXCC

Work YLs in 100 different countries. Use an approved DX countries list. Open to all YLs and OMs. Endorsements available each additional 10 YL countries. Fees VE and USA $3.00; all others $4.00.

Japan Ladies Radio Society (JLRS) Awards

General requirements. GCR list and 10 IRCs applicable for each award. Contact 26 licensed YL operators whose last letter of their callsign includes all 26 letters of the alphabet (this is called the YL Alphabet Certificate). No time limitations. Class A is for contacts with JLRS members only. Class

B for YLs anywhere in the world, including at least five Japanese YLs for operators outside Japan. Applications should be sent to: Kazuko Isiguro JE2EWW, 59-7 Wakinoshima-cho 7-chome, Tajima City, Gifu 507, Japan.

YL-10 Certificate

Requires 10 confirmed contacts with licensed YL operators world-wide, including at least one Japanese YL. Contacts after 1 January 1953. Your application goes to: Ayako Inagawa JE3LFH, 1-18-11-701 Minamihorie, Nishi-ku, Osaka 550, Japan.

YL-CW Certificates

For each of the following six awards, GCR list and 10 IRCs or equivalent goes to: Nobuko Nishigori JA3UPR, 2-6-11 Hirosedai, Kaai-machi Kitakatsuragi-gun, Nara-ken 636, Japan.

YL-CW-AJD

Contact a licensed YL operator in each of the ten call areas of Japan.

YL-CW-WAJA

Contact a licensed YL in each of the 43 Prefectures.

YL-CW-JCA Certificate

Contacts with YLs in 10 different Cities in Japan. Endorsements for each group of contacts with 10 additional different cities.

YL-CW-10 Certificate

10 contacts with different licensed YLs anywhere in the world. Endorsements for each group of 10 additional contacts.

YL-CW-Alphabet Certificate

26 contacts with licensed YL operators anywhere in the world. The last letters of their callsigns must represent all the 26 letters of the alphabet.

As can be seen, I had already begun to prepare this monthly report in lieu of receiving information from our YL population. Lo and behold, young Jessie Buchanan came forward with the very info I was begging for, but very close to time of publication. As a matter of interest, material for this column can be sent directly to my Call Book address, which appears each month at the end of this column.

The ALARA Award

This Award is issued by the Australian Ladies Amateur Radio Association.

1. The award is available to all licensed amateur operators and SWLs.
2. Contacts with members of ALARA since 30 June 1975 are valid for this award.
3. No band or mode limitations.
4. Contacts must be made from the same call area.
5. Requirements: VK/ZL require contacts with 10 members in five Australian States. DX stations require contacts with five members in four Australian States.
6. Stickers are available for each additional 10 (VK/ZL) or five (DX) members contacted. Special endorsements are available, eg all CW, all phone, etc.
7. Applicants must submit a complete log extract, certified by two other amateurs with their signatures appended. When an applicant is located in an isolated area with no possibility of obtaining certification, QSL cards must be forwarded for checking.
8. The fee for the award is $AUS3.00 or four IRCs and $AUS1.00 for additional stickers (no fee for stickers attached with the original issue of the award).
9. The address for applications is: Jessie Buchanan VK3VAN, 4 Milford Crescent, Karingal VIC 3199, Australia.

NZ WARO Awards

General: Contacts may be in any mode or band, with the applicant's contacts all from the same QTH. Contacts via repeaters, in WARO Nets, or Contests, are ineligible for this award. QSLs are not required. Send log list certified by one other licensed radio amateur to the Award Custodian with sufficient postage for return of the award.

Main Award: ZL and VK stations work 12 WARO members resident in New Zealand, DX stations work six members. Contacts should date from 1 June 1969. Endorsement seals are available to ZL and VK operators for each additional 12 stations, for DX six. Contacts with WARO DX members qualify for endorsements, but applications must contain at least three ZL contacts.

VHF Section: 10 VHF contacts with WARO members dating from 1 January 1979. WARO members and/or applicants may be home station, mobile or portable. Endorsements for each additional five contacts.

SWL Section: ZL and VK stations list 20 contacts heard with WARO members. DX list 10, dating from 1 January 1979. List full log details with call signs of both stations concerned. Endorsements for each additional 10 (five for DX) stations.

NZ WARO Century Award

1. Applications for this award must contain full log details of contacts with 100 WARO members (DX included) dating from 1 June 1987, and be signed by one other licensed amateur operator.
2. Contacts may be any mode, any band, or mixed, and from any QTH, but each YL claimed must be a financial member of WARO at the time of the contact, and may be claimed only once.
3. Contacts made via repeaters and in nets will qualify as will those made during WARO contests since 1 June 1990.
4. No QSLs required. Send list with full log details, and $2.00 to: Award Custodian, Eileen Bain ZL1BRX, 58 George Crescent, Buckland RD2, Pukekohe 1800, New Zealand.

Net information: 3.690 and 3.700 MHz on Mondays at 8 pm (NZ time).

ARRL – YL Century Club (YLCC)

Available to all licensed radio amateurs. Two-way communications must be established on authorised amateur bands, with stations mobile or fixed, and operated by 100 different licensed lady operators. The same YL using different call letters will NOT count. Any and all amateur bands may be used.

Contacts with YLs anywhere in the world are recognised provided only that confirmations clearly indicate the stations were operated by duly licensed women amateur radio operators.

List of claimed contacts, including the full name of the operator, alphabetically arranged by LAST name, call sign, date, band, mode, and RS(T) of each contact.

Endorsements: Confirmation of contacts accompanied by an alphabetical list, as described above, from stations operated by additional YLs may be submitted for credit each time 50 additional confirmations become available. Endorsements will be made to the original certificate when application is approved. Gold stickers will be awarded to applicants who have worked their additional contacts from the same country; otherwise, silver stickers will be awarded.

Worked All States YL (WAS-YL)

Available to all amateurs. Contact must be made with a duly licensed YL in each of the 50 states in the US. The District of Columbia may be counted for Maryland. There are no time or band limitations.

The call used is immaterial, provided it is licensed to the applicant. In qualifying for this certificate, it is possible to work the SAME YL in each of the 50 states.

The list of contacts must be arranged alphabetically by State, and must include the call letters, date, band, mode, RS(T), and the YL's first name.

There is no charge for these certificates, but sufficient postage for first class mail, or a stamped legal-sized envelope, must accompany the application.

Custodian for the YLCC is: Le Henderson KB6MXH, 857 Tamerack Lane, Sunnyvale CA 94086, USA.

Custodian for WAS-YL is: Richea Brigance KU5L, RR2 Box 197, Booneville AR 72927, USA.

Time and space restrict me from mentioning more YL awards at this moment, but I promise to provide more during the coming year.

*4 Brook Crescent, Box Hill South, VIC 3128
Phone (03) 9889 8393

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Club Corner

Adelaide Hills Amateur Radio Society Inc

It's on again. Yes, the Adelaide Hills Amateur Radio Society Annual Buy and Sell!

Where? The Westbourne Park RSL Hall, 200 metres south of Big W on Goodwood Road.

When? Saturday, 22 November 1997. Doors open for sellers at 8.00 am, for buyers at 9.00 am, and the hall closes at 2.00 pm.

How much? $10.00 per table (with one seller), $2.00 each for extra selling staff, and $2.00 for all buyers. Table bookings can be made by contacting Geoff Taylor VK5TY on 08 8293 5615.

What's for sale? Electronic equipment and parts, computer bits and pieces, hardware, books and a full range from Daycom Electronics, food, tea, coffee and cool drinks.

Geoff Taylor VK5TY

Summerland Amateur Radio Club

The Summerland Computer Expo, sponsored by the Summerland Amateur Radio Club, will take place on Saturday, 22 November 1997 at the Lismore City Hall from 9.30 am to 4.30 pm.

There will be displays of the latest in computer technology, Bring and Buy tables for your pre-loved gear, Internet demonstrations, lucky door prizes and refreshments.

For more information, contact John on 02 6621 5217 or Graeme on 02 6685 1336. The Club's e-mail address is *sarc@nor.com.au*.

The New England Amateur Radio Regional Conference Group

The Regional Conference/Field Day was held on the first Sunday of September at the Armidale Aero Club, Armidale.

Convener Roger Chubb welcomed all members who attended, with special thanks to our WIA representative. Our conferences are always well attended, but the September meeting showed an increase of 80% due to the incorporation of the 1st Bi-annual Armidale Field Day.

Congratulations to David Margery from Tamworth, who was the winner of the WIA award for "Contributions to Amateur Radio".

Matters discussed at the meeting included the next NSW WIA Conference of Clubs, the drop in WIA membership, the new correspondence course and the North West Wormhole.

The field day was a busy hive of trash and treasure exchanges, great bargains and informative displays. Activities included a 2 metre fox hunt, a knowledge quiz and a demonstration of HF fox hunts

Our next conference has been set for the first Sunday in March, 1 March 1998. So do come along and join the fun.

RAOTC (Radio Amateur Old Timers Club)

RAOTC members and friends in all states are reminded that daylight saving time will apply to Club broadcasts in November, December, January, February and March.

The 80, 40 and 2 metre broadcasts will take place at 2300 UTC (10 am EADST). The 20 m "north" broadcast will remain unchanged at 0100 UTC; 20 m "west" unchanged at 0200 UTC; and the evening broadcast will be on 80 m at 0930 UTC (8.30 pm EADST).

Allan Doble VK3AMD
ar

Contests

*Peter Nesbit VK3APN - Federal Contest Coordinator**

Contest Calendar Nov 97 - Jan 98

Nov 1/7	HA QRP Contest	(Oct 97)
Nov 2	High Speed Club CW Contest	(Oct 97)
Nov 8	ALARA Contest	(Oct 97)
Nov 8/9	WAE RTTY DX Contest	(Jul 97)
Nov 8/9	OK-DX CW Contest	(Oct 97)
Nov 15/16	IARU Region 1 160 m Contest	(Oct 97)
Nov 29/30	CQ World-wide DX CW Contest	(Sep 97)
Dec 5/7	ARRL 160 m Contest	
Dec 13/14	ARRL 10 m Contest	
Dec 20-21	Croatian CW Contest	
Dec 27/28	Stew Perry Top Band Distance Challenge	
Dec 27 - Jan 25	Ross Hull VHF/UHF Contest	
Dec 28	RAC Canada Winter Contest	
Dec 31	ARRL Straight Key Night	
Jan 10-11	VHF/UHF Field Day Contest	
Jan 10-11	HA DX CW Contest	
Jan 23-25	CQ WW 160 m DX Contest	

In the midst of our contesting and DX chasing, it is easy to forget that once we were beginners. Some of us entered the hobby as Novices, whereas others jumped in the deep end, sometimes successfully at first try, sometimes not.

It is also easy to overlook the fact that there are some fine operators within the Novice ranks. I was reminded of this recently by an e-mail from David VK3NDS:

"I have attached a copy of a message sent to me by Bob Cox of CQ magazine, which confirms that I have the highest claimed score in the 21 MHz QRP CQ WW SSB contest 1996 (WORLD!!), which I am ecstatic about. Also, in the WPX 1996 SSB 21 MHz contest, I am #1 in VK and a certificate winner. I thought you may be interested for your column in Amateur Radio, but I also think it's nice to have some major world first-place trophies coming to Australia in the big contests, especially for the Novices here. I am about to complete my full call theory having done my CW, but I am pleased to have these wins under the belt as a Novice.

"Here is a copy of the message, as I have not yet seen the results of these contests in Amateur Radio. Regards, David."

(From Bob Cox K3EST:)

"Dear David,

Very nice to hear from you. It appears that your high claimed score in the 1996 SSB CQ WW was very good, at #1 in the World on 21 MHz. Quite a feat from 'down under'. Here are the top claimed scores on 21 MHz QRP CQ WW SSB:

VK3NDS	*21*	*76,380*	*394*	*21*	*46*
Z32DR	*21*	*31,570*	*233*	*20*	*62*
EC1AIT	*21*	*24,764*	*190*	*23*	*59*
EC1AIS	*21*	*19,000*	*128*	*20*	*56*
UR5MTA	*21*	*16,030*	*151*	*14*	*56*
JR1LQK	*21*	*110*	*5*	*5*	*5*

GREAT DEALS ON COMMUNICATIONS

FT-10R 5 Watt 2m Handheld

A compact 2m hand-held with a unique clam shell design and rear-mounted NiCad battery pack that provides 5W RF output as standard through the use of a MOSFET power amplifier and extensive component miniaturisation. Built to a tough MIL-STD 810 rating for shock and vibration resistance, the FT-10R also uses gasket seals for improved weather proofing.

Features:

- Tx 144-148MHz, Rx 140-174MHz
- RF Output: 5.0, 2.8, 1.0, 0.1W
- Dual watch facility
- Large Omni-Glow backlit display
- High efficiency speaker for super loud audio
- CTCSS encode/decode
- Auto battery save, Tx save & auto power off for longer operating times
- 12V DC socket for charging and power
- Keypad frequency entry
- 99 memories
- Digital code squelch
- Size: Just 62 x 100 x 42mm (WHD)
- Comes with FNB-41 9.6V 600mA/H NiCad, A16D version keypad, belt-clip & AC charger.

D 3650

STILL JUST
$399

YAESU

2 YEAR WARRANTY

FT-840 Economical HF Mobile Transceiver

A serious HF transceiver that won't break the bank and doesn't compromise performance at home like many current micro-rigs. The Yaesu FT-840 gives you full 160m to 10m amateur band coverage (receiver 100kHz-30MHz), 100 memory channels, a large back-lit LCD screen, an effective noise blanker and an uncluttered front panel. The FT840 is simple to use, with useful features like an SSB speech processor for added audio punch, IF shift to fight interference and Direct Digital Synthesis oscillators for cleaner transmit and improved receiver performance. Includes DC power lead and hand microphone... just connect your power supply and antenna and start having fun!

D 3275

$1395

YAESU

2 YEAR WARRANTY

Advanced Data Management Software

An advanced way to program a variety of the functions on many of the latest Yaesu handheld and mobile transceivers. Each package consists of an interface that plugs into both the serial port of your PC and connects to the transceiver via its microphone socket (for handhelds) or its packet socket (for mobiles). Also provided is easy-to-use 3.5" format PC software with pull down menus that allow for programming and naming of memory channels, selection of output power, CTCSS tones, scan and battery saver operation plus much more.

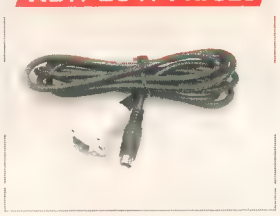
NEW LOW PRICES

ADMS-1C for FT-10R/11/50 and 51R

D 3752 — **$79.95** — **Was $85**

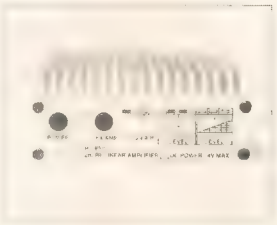
ADMS-2C for FT-3000M/8000R/8500

D 3758 — **$69.95** — **Was $85**



2m 80W RF Power Amplifier

Designed specifically for use with 2m FM handhelds, this solidly built high power 80W RF power amplifier will really give a boost to your signal when you're using a hand-held at home or in the car. It works with RF input levels of 0.5 to 5W, provides 80W output with typically just 2.5W input, and even just 1W input will still provide over 40W output. A switchable 12dB gain GaAs FET receiver pre-amp can also be selected for improved performance in quiet RF areas. The amplifier includes a large die-cast heatsink, fused DC power lead, SO-239 input/output connectors, and simple LED metering for DC supply voltage and relative RF output power.
Frequency range 144-148MHz only.
Requires 13.8V DC at 20A max.
Size: 124 x 44 x 208mm (WHD) including protrusions.



D 2520 — **$169** — **SAVE $30**

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GREAT DEALS ON COMMUNICATIONS

FT-50R 2m/70cm Handheld

The Yaesu FT-50R is an amazingly compact 2m/70cm Amateur band handheld transceiver which provides MIL-STD 810 shock and vibration resistance, super wide band receiver coverage, simple menu settings for most functions and compatibility with the optional Yaesu ADMS-1C software/interface package for PC programming of many functions.

Other features include:

- Tx 144-148MHz, 430-450MHz
- Rx 76-200, 300-540, 590-999MHz (cellular blocked)
- New FTT-12 keypad provides Digital Voice Recording, DTMF paging, CTCSS/DCS scanning and CTCSS encode/decode
- 2m/70cm RF output: 2.5, 1.0, 0.1W
- "Omni-glow" LCD screen for easier night viewing
- 112 memory channels with 4 character Alpha-numeric naming
- High speed scanning, 12V DC socket, Digital Code Squelch
- Dual watch allows monitoring of sub-band activity
- Direct FM modulation for better audio quality
- 5 battery saving systems (includes Rx and Tx Save, and Auto Off)
- Rear panel clamshell battery pack
- Supplied with FNB-40 slimline 6V 650mA/H NiCad battery pack, flexible 2m/70cm antenna and modified M-9626 AC plug pack adaptor for NiCad charging

D 3660

$599

YAESU

2 YEAR WARRANTY

Revex W560N HF/VHF/UHF SWR/PWR Meter

Quality Revex wide-band SWR meter, offering 2 inbuilt sensors for 1.8MHz to 525MHz coverage! Provides measurement of 3 power levels (3W, 20W, 200W) and SWR. Uses an N-type socket for the VHF/UHF sensor to ensure minimal loss. Measures 120 x 80 x 85mm.

D 1375

$199

SAVE $50

3-15V 25 Amp DC Power Supply

This solidly built bench top power supply provides a current of up to 25 amps ICAS at 15V, 20 amp continuous at 13.8V and lower current at lower voltages.
It also has front panel metering, plus high current banana-style and low-current output connections for extra flexibility. An internal heatsink and thermally-switched fan provides cooling without protrusions in the metal case (which measures 320 x 150 x 145mm).
Specially modified for more reliable long-term operation, it uses a rugged 50 amp bridge rectifier & trifilar transformer. Also provided is extensive overload protection through dissipation limiting circuitry for the pass transistors, a 30 amp instantaneous current limit, AC mains circuit breaker, a transformer thermal fuse & fused auxiliary secondary winding.

Cat D 3800

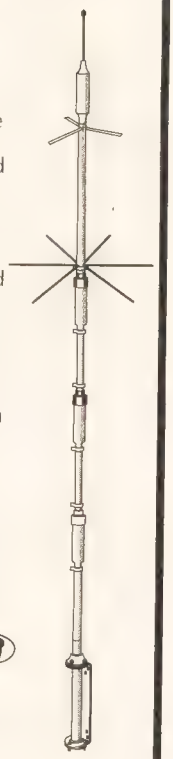
$299

Great Value!

Rugged HF 5-Band Trap Vertical Antenna

The rugged 5BTV incorporates Hustler's exclusive trap design (25mm solid fibreglass formers, high tolerance trap covers and low loss windings) for accurate trap resonance with 1kW (PEP) power handling. Wide-band coverage is provided on the 10, 15, 20, and 40m bands (SWR typically 1.15:1 at resonance, <2:1 SWR at band edges) with 80kHz bandwidth typical on 80m at less than 2:1 SWR. An optional 30m resonator kit can be installed without affecting operation of other bands. High strength aluminium and a 4mm (wall thickness) extra heavy-duty base section guarantee optimum mechanical stability. At just 7.65m, the 5BTV can be ground mounted (with or without radials, although radials are recommended), or it can be mounted in an elevated position with a radial system. Unlike other antenna designs, the 5BTV can be fed with any length of 50 ohm coax cable.

D 4920



$349

HUSTLER

30m Resonator Kit

Adds 30m coverage to the 5BTV and includes all hardware.

D 4921 **$89.95**

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"In the 1996 WPX SSB Contest, the scores were:

Low Power 21 MHz, #1 in Australia and certificate winner."

This should shake up all those who consider it so hard to get a top world score in a major DX contest, that they don't bother trying. I know it often is very hard, especially when one is up against big signals from Europe and America but, as David shows, it can be done. Equally impressive is the fact that, despite the restrictions placed on Novices and the lack of extensive experience, David still managed to more than double the score of his nearest opponent! Well done, David, and may that inspire some of our full call operators into trying that little bit harder next contest. They might surprise themselves.

For information and assistance this month, many thanks to VK2PS, VK3DID, VK3NDS, KM9P, VE2ZP, ZL1AS (ex ZL1AAS), 9A2EU, AHARS, and ARRL. Until next month, good contesting!

73, Peter VK3APN
pnesbit@melbpc.org.au

Date Correction - CQ WW CW

Arrgh! It's happened again! I'm indebted to Stephen Pall VK2PS for pointing out my unforgivable error in last month's *Amateur Radio*, which showed the wrong date for the CQ WW CW Contest, of all things. Please note the correct date, which is (as always) the last full weekend of the month, and this year is 29/30 November (thanks Stephen).

ARRL 160 m DX CW Contest

5-7 December, 2200z Friday to 1600z Sunday

The object in this contest is to work as many W/VE stations on 160 m CW as possible. Categories are: Single Operator (QRP to 5 W, Low Power to 150 W, and High Power above 150 W O/P), and Multi-operator single Tx. Exchange RST; W/VE stations will add their ARRL/CRRL Section. /MM and /AM stations should add ITU region 1, 2 or 3 as applicable. 1830-1850 kHz is recommended for intercontinental QSOs.

Score five points per QSO. The multiplier is the total number of ARRL/CRRL sections plus VE8/VY1 worked (max 77), and the final score equals QSO points x multiplier. Logs on MS-DOS disk are welcome. Send logs postmarked no later than 30 days after the end of the contest to: ARRL Contest Branch, 225 Main Street, Newington, Connecticut, CT 06111, USA. Logs can also go to the ARRL BBS at 203-665-0090, or via the Internet at *contest@arrl.org*. Certificates will be awarded to the top scoring station in each category, in each DXCC country. Note that the use of non-amateur radio means of communication during the contest (eg telephone) is not allowed for the purpose of soliciting QSOs.

ARRL 10 m Contest (CW & Phone)

13-14 December, 0000z Saturday to 2400z Sunday

This popular ARRL contest runs on the second full weekend of December each year. The object is to work as many stations world-wide as possible on 10 m phone, CW, or mixed. Maximum operating period is 36 hours, and listening time counts as operating time. Categories are as for the 160 m contest (see above). Send RS(T) plus serial number; W/VE will send RS(T) plus state or province. CW entrants should stay below 28.3 MHz, avoiding beacon frequencies. Stations entering the mixed mode section may work stations once on CW and once on phone.

Score two points per phone QSO, four points per two-way CW QSO, and eight points for CW QSOs with US novice or technician stations signing /N or /T (28.1 - 28.3 MHz only). Multipliers are the 50 US states plus District of Columbia (DC), plus Canadian provinces (see below), plus DXCC countries except US and Canada, plus ITU Regions (/MM and /AM QSOs only). Multipliers are counted separately on each mode. Final score is total QSO points x total multiplier. Include a dupe sheet for 500+ QSOs. Logs should be sent as for the 160 m Contest, within 30 days (see above).

Croatian CW Contest

20-21 December, 1400z Saturday to 1400z Sunday

This contest is open to stations world-wide. Sections are single operator all band, and multi-operator all band. Use 160-10 m, CW only, and exchange RST plus ITU zone.

For each valid QSO with a 9A station, claim ten points per QSO on 160/80/40, and six points on 20/15/10. For QSOs with other continents, claim six points on 160/80/40, and three points on 20/15/10. For QSOs with own continent, including own country, claim two points on 160/80/40, and one point on 20/15/10.

Multipliers are the number of DXCC/WAE countries on each band, and the final score equals the total QSO points x the total multiplier from all bands. Forward your log, summary and dupe sheets within 30 days to: Hravatski Radio Amaterski Savez, Dalmatinska 12, 10000 Zagreb, Croatia. Logs on 3.5" disk are also welcome.

Stew Perry Top-band Distance Challenge

27/28 December, 1500z Sat - 1500z Sun

This difficult contest is a real test of one's ability to copy weak signal information through the noise. It is for 160 m CW only. The exchange is a four character grid square (see P16 of *Amateur Radio*, December 1996 for details on how to work out your grid square). RST is optional, but if given, should be accurate.

The number of QSO points for each contact depends on the distance between the two stations, which is computed by taking the distance between the centres of the two grid squares. Count a minimum of one point per QSO, and add one extra point for each 500 km distance. For example, a QSO with a station 1750 kilometres away will count for four QSO points. No additional distance for long path is allowed. If you work a station who doesn't know their grid square, you can claim only one point for the QSO. CT, NA, and TR software will support this contest, including QSO point calculations.

The final score equals the total number of QSO points. There are no country or grid square multipliers. Stations running five to 100 watts output can multiply their score by two, and stations running less than five watts can multiply their score by four.

Logs must be postmarked by 28 January 1998, and sent to: Bill Fisher KM9P, 1137 Charlie Ln, Lilburn, GA 30247-4203, USA. Logs on disk are also welcome in ASCII format. Alternatively, logs can be e-mailed to: *TBDC@contesting.com*

Logs will be checked using computer techniques to detect busted callsigns, exchanges, and not-in-log QSOs. Busted QSOs will be removed from both logs. Unique percentages will be reported in the results. All decisions by the judges are final.

Canada Winter Contest

28 December, 0000z to 2359z Sunday

In this contest you can work anyone else for contest credit, on CW or phone, 160-2 m. You can enter as single operator single band, all band, or all band low power (100 W O/P); or multi-operator. On CW try 25 kHz up on the half hour, and on phone 1850, 3775, 7075, 7225, 14175, 21250 and 28500 kHz. Send RS(T) plus serial number; Canadians will send RS(T) plus province. (VE0 will send RS(T) plus serial no.)

Score 10 points for each QSO with a Canadian station including VE0, and two points for each non-Canadian QSO. QSOs with official Canadian RAC stations (RAC suffix) are worth 20 points. Note that CW and phone QSOs must be made in the appropriate sub-band to be valid. Multipliers are the ten Canadian provinces and two territories, and are counted once per band and mode (ie 12 on 160 m SSB, 12 on 160 m CW, 12 on 80 m SSB, etc). Multipliers are listed below. Final score equals total points x total multiplier. Send logs to: RAC, 614 Norris Court - Unit 6, Kingston, Ontario, K7P 2R9, Canada by 31 January 1998.

Canadian Provinces & Territories

NS	Novia Scotia (VE1, CY9, CY0)
PQ	Principality of Quebec (VE2, VA2)
ON	Ontario (VE3, VA3)
MB	Manitoba (VE4)
SK	Saskatchewan (VE5)
AB	Alberta (VE6)
BC	British Columbia (VE7)
NT	North West Territories (VE8)
NB	New Brunswick (VE9)
NF	Newfoundland & Labrador (VO1, VO2)
YU	Yukon (VY1)
PE	Prince Edward Island (VY2)

Results of 2nd South Pacific 160 m Contest (Amended)

Presented by Ian Godsil, VK3DID

The original results of this contest were forwarded in September, after which I was away for two weeks, and appeared in last month's *Amateur Radio*. Upon my return there was a letter waiting for me containing six logs which had been sent to last year's Manager, John ZL1AS (ex ZL1AAS), who himself had been overseas for several months.

After consultation with the NZART and WIA Contest Managers, it has been decided to re-issue this year's results. They appear below.

I apologise for any confusion, and for any disappointment due to a minor reshuffling of awards, but as these logs would have been received

within the deadline if ZL1AS had been at home to pass them on, it seems the fairest course of action under the circumstances.

As things stand, it is the intention to alternate Managers each year between ZL and VK, so **PLEASE** check carefully where to send them next year. Again my thanks for your co-operation.

73, Ian VK3DID

CW				
Call	**QSOs**	**Pts**	**Mult**	**Score**
ZL2SQ *	38	166	15	2415
VK6VZ *	25	119	14	1666
VK3IO *	27	123	12	1476
VK3APN	23	100	12	1200
VI3PES	20	91	13	1183
ZL1ANJ *	18	81	13	1131
ZL1ALZ	21	99	11	1089
VK5GN *	31	115	9	1035
VK3DID	18	75	10	750
VK8AV *	14	70	8	560
ZL4GU *	12	60	7	420
ZL2JR	10	47	10	329
YC0LOW *	2	10	3	30
VK6BEB	2	4	1	4
SSB				
VK5CRS *	70	312	16	4992
VK3IO *	51	216	12	2592
ZL2JR *	36	165	11	1815
ZL1ANJ *	24	102	12	1224
ZL1BRY	27	117	8	936
VI3PES	23	91	10	910
VK6VZ *	16	80	10	800
ZL3TX *	20	100	7	700
ZL2AWH	16	74	7	518
ZL1UE	16	62	8	496
ZL1ALZ	17	70	7	490
VK3DID	18	66	7	462
VK3APN	15	51	8	408
ZL1AGO	15	57	7	399
VK5GN	8	34	6	204
VK8AV *	7	35	5	175
AJ6T *	4	20	5	100

*Certificates

1997 AUSTRALASIAN SPRINTS

Presented by Contest Manager AHARS

Entries for the twelfth series of the Australasian Sprints totalled eight in the CW section, and 23 in the Phone Section. The number of participants in the CW section was the fewest ever, and no logs were submitted by Novice class CW operators. The scores were generally very satisfactory, particularly in the phone section, and indicate quite good conditions on both nights. However, the main aim of the Sprints is for operators to enjoy themselves, and this appears to have happened again this year.

The Adelaide Hills Amateur Radio Society and the SA/NT Division of the WIA congratulate the WIA (ACT Division) in the CW section (Station VK1WI was again operated by Jim Miller VK1FF), and Barry Channon VK5KCX in the phone section, both being successful for the second successive year in close contests. Congratulations also to the leading scorers in the individual call areas.

Lists of the logs submitted with the scores achieved are shown below. Certificate winners are indicated by asterisks.

CW Results			
VK1WI **	28	VK5PO	64
VK1PK	12	VK5AXW	62
VK3APN *	26	VK5EN	52
VK5AFO *	14	VK5STR	42
VK5UE *	4	VK5NOS	40
VK6JS *	3	VK5RV	30
VK8AV *	22	VK5UE	28
ZL1ALZ *	24	VK5TD	23
Phone Results		VK5TY	21
VK1WI *	42	VK6NU *	30
VK1PK	19	VK6JS	10
VK2LEE *	44	VK8AV *	42
VK3IO *	46	ZL1AGO *	36
VK4MOJ *	32	ZL1BVK	34
VK4JAE	15	ZL1ALZ	26
VK5KCX **	66	ZL3GL *	17

Results of 1996 VK/ZL/Oceania DX Contest

Presented by John Litten ZL1AS (ZL1AAS)

PHONE	**80m**	**40m**	**20m**	**15m**	**10m**	**Final Score**
OCEANIA						
DU1SAN			30820			30820
DU7AFT				8466		8466
V63HZ				11024		11024
VK1NTW				60358	60358	
VK2APK		200340				200340
VK2PS	2684					2684
VK2VM		4640	2028	114444		212160
VK2XT	60	5220	10710	215940	3	457758
VK4BAY		1105	270	26350	612	58000
VK4EET		10140	1800		29820	
VK4LAA	10					10
VK4MZ	1440	193550	35074	113920	5832	1252728
VK5AI		245	420			1512
VK8AV			6204	36720	240	87248
VK8DK		550	156			1496
YC6PUP				35934		35934
ZL1AIZ	64350	30030	1024	512		270111
ZL1ANJ		22265	88	84900		206298
ZL2AMI		40040		336		97482
ZL2AWH	480	2090	4650	2184		39445
ZL3TX	3800	100	1380			14363
ZL4AV	40	405	1054	8		4532
ASIA						
4L7AA		120	20			280
EK4JJ			12	2	2	32
EZ8CW				12		12
JA1AAT			4	320	3	481
JA1AAV				40		40
JA1AB				140	3	184
JA1GYO			374			374
JA1HFY			8	130	6	288
JA1MQS			1	96		119
JA1XEM		45				45
JE1XCZ			112	900	15	2136
JF1KFV	40	525	152	380		4104
JF1OPL	40	1050	25	240		4000
JG1EHF				90		90
JG1GCO				24		24
JG1UKW				132		132
JH1DVG			40	288		572
JH1NXU				8		8
JH1RMH				168		168
JH1UUT				728		728
JL7PVR/1				132		132
JQ1NGT				1024		1024
JR1BAS			136	700	9	1748
JR1BSV				18		18
JA2DLM	300	1755	532	720	63	14758
JA2GHP				300		300
JA2GTW		30				30
JA2IZA				108	18	216
JA2YAU			98	672	9	1562
JR2TRC				420		420
JA3BVJ		100	128	396		1771
JA3LEZ				810		810
JA3SSB			4			4
JF3EIU					66	66
JH3AKD				256		256
JH3WKE		30	42	552		1360
JK2VOC			25	90		230
JR3CVJ				360		360
JR3KAH				140		140
JA4GXS				280		280
JI4SEU		60				60
JN4AWW				154		154
JA5BSQ		100	3168		4396	
JA5OP				306		306
JA5PEE				36		36
JA6QDU				120	9	203
JA6UBK		80				80
JA6ZLI			1	48		65
JA7BEW	90	40	63	832		2825
JA7DAH		20		342		528
JA7YFB		175	1	132	12	910

JH7JGG	40	700		1156	12	5400
JR7LVK				440		440
JA8WY		120		460		1064
JA8JCJ				484		484
JA9XBW		60				60
JE9LLO		175	1	598		1558
JE9REN		45		168		390
JE9TRA				80		80
JR9NVB		250	12	870	6	2832
JA0HYU		75				75
JF0VCD		420	324	924	9	5508
JH1BXH/0			55	624	36	1540
JH0EPI				320		320
JI0BRB		20		168		306
7K2QOX		20	88	196		833
7N2UTO		60	9	240		742
RA0FF		1100	918	400		7683
RK0Q		1170	378	70		4788
UA0LCZ	10	175	378	168		2592
UA0SJ		200	736	272		3480
7L4IOU		440	308	576		4061
UN5F		840				840
UN6P		240	322	90		2106
UN9PQ				18		18
Asiatic Russia						
RK9JWW		80	60	40		560
RK9XWH	120	1320	900	644		11438
EUROPE						
Bulgaria						
LZ1LZ			20			20
LZ2TW			16			16
Czech Republic						
OK1DRQ				2		2
OK2EQ		5	9	18		98
Finland						
OH3KCB				72		72
OH6IU		45	1460	40		2646
OI6YF		5	8	42		138
Germany						
DL1DQY		5				5
DL6AKK			1			1
Italy						
IK2UCK		40	1			63
IK3OII		20	4			48
IK4SWX		270	432	110		2369
Lithuania						
LY1DR	200	455	2323	252		10492
LY3BA			152			152
Netherlands						
PA3EPN	1080		40	8		2496
Norway						
LA2IR			28			28
Spain						
EA7BA	10	30	351	8		936
Svalbard						
JW8GV		270	120			780
Sweden						
SM2DMU		315	784	24		2650
Switzerland						
HB9IK		245	220	24		1323
Russia						
U5WF		80	615	42		1650
UA6ART		5	180	2		300
UT3C		315	117			928
Ukraine						
US1I	10	720	1660	108		6669
US7IGF			1	30		44
US7IYU			1	24		36
Yugoslavia						
YU7SF			1	2		6

SOUTH AMERICA						
Peru						
OA4CPI		920	126			1995
Multioperator:						
Oceania:						
VK4EMM	1000	41625	11475	306740	7560	1015105
SWL						
Asiatic Russia						
UA0-107-181	300	440	390	182		5845
Belgium						
ONL-383		45				45
Slovak Republic						
OM3-0001	40	150	420			1680
OM3-27707		210	160	8		990
Poland						
SP-0189-GD			12			12
Ukraine						
US-I-604			72	2		99

Check Logs:
EA1CBX, SM5BBS, VI75RAAF, VK5OE, YC0LOW, ZL3GQ

CW RESULTS
OCEANIA

Australia						
VK2AIC	40	200	525	180		4500
VK2APK	25850	875670	22302	9328	864	2072283
VK2AYD	52510	602880	17368	7154	585	1734486
VK2BQQ		240625			240625	
VK2DID	100	3960	169	180	11904	
VK2KM	40	987480	15200	18460	2112	1872351
VK2PS	280	97745		1584	1372351	
VK2VM	83070				83070	
VK3APN	1800	342990			385670	
VK4EMM	93790	1469590	12150	25872	10032	3906396
VK4ICU		500	2052	3960	3393	37074
VK4TT			39878		39878	
VK4XA					18639	18639
VK5AGX			1120			1120
VK5GN	34170	71440	11776	7700	1020	544004
VK6IV		12375			12375	
VK8AV	72000	333900	43254	57980	8364	2233660
Indonesia						
YB2UDH		4030	10810	26208	27	121338
YB6TI				35964	35964	
Micronesia						
V63HZ			6566			6566
New Zealand						
ZL1AIH	2040	21390				38110
ZL1AIZ	158110	181700	1960	1914		937980
ZL1HV	320	28810	7632			88088
ZL2AGY		1348950				1348950
ZL2AWH	240	2280	210	144		9585
ZL2CD		193590				193590
ZL2REX	90	47150	1998			80398
ZL3GQ	112500	1419795	37026	8816		3709228
ZL4OK	13440	91060	525	4872	3	277278
ZL4OL	29140	142975	110	8		328320
ASIA						
Armenia						
EK4JJ			70			70

Asiatic Russia						
RA0FF	900	2080	495	864	36	20104
RA0FU	2000	2775	690	918	312	34060
UA0LCZ	990	1265	336	280		12188
Israel						
4Z4TA		650	4			804
Kazakhstan						
UN6P	250	800	108	84		4680
Japan						
JA1AAT			35	8		77
JA1AB		60	20	144	54	1207
JA1HFY			9	2		20
JA1HP			240	432		1344
JA1KI		20	12			70
JA1XEM	120	385	12	120		2261
JE1ARQ		200	242	12	3	1349
JE1KDM		315				315
JE1XCZ		40	126	90	96	1520
JG1UKW					54	54
JH3LCU / 1	10	270	80	70	54	2231
JK1LUY			28			28
JP1SYV	350	1350	448	576		11223
JA2GTW		1050				1050
JA2QVP	90	100	8	56	75	1584
JA2VQF			49			49
JA2XI	10	75	160			714
JF2UPM	10	20	135	40		720
JK2VOC		300	176	84	6	2064
JM2RUV		5				5
JR2WLQ		75	48	144	45	1452
JA9DDF / 2	10	315	378	324	28	4865
JA3ARM		225	80	32		1071
JA3BVJ	250	600	117	352	165	7714
JA3NMV / 3		75	25	72		588
JF3IUC		385	264	330	180	5005
JH3WKE	90	900	405	408		7240
JL3SBE	200	480	1	24	36	2489
JQ3JUG				96		96
JA4BAA		210	25	24		672
JA4BTD					45	45
JA4ETH	10	240				350
JH4CPC	20	45				140
JH4JNG	420	440	420	154	54	7527
JI4HKA	40	120		18	24	748
JI4SEU		385	42			806
JM4WUZ		60	96	126	3	1007
JA5BSQ	900	1210		700	18	9684
JA5PEE					27	27
JA6BWH	250	250	6	24	12	1989
JA6TQ			49	182	180	1311
JA6UBK		1080				1080
JA6PVO			20	12		66
JA6ZLI	10	20	2			88
JE6AEO	630					630
JE6IBJ		440				440
JI6DMN			9	70	63	418
JA7AMK		650	99	56		2070
JA7DAH		1000	150	168		3753
JA7ODY	10	1740	162	300	72	8028
JA7QQQ		720				720
JA8AJE		280	20	252		1460
JA8MXC		45	4	8		147
JH8BDA		280	35	50		969
JA9BKU		120	56	60	12	1054
JA9GCI	200	385	150	216	132	6018
JA9XBW		600				600
JE9LLO		1219	130	270	24	5280
JE9REN		20				20
JR9NVB	160	1210	35	140	120	6417
JE0UXR	880	2730	666	736	180	25864
JF0VCD	90	560	1			1212
JH0EPI		225	25	18		728
JH0GHZ	300	1155	264	352	180	11220
JH0IXE		120	160	216	96	2538
JR0BQD	40	900	25	216	24	4228
7L1WGY			528			528
7N3SDR		100		60	18	506
7M2MEF		1495	299	690	234	10481
Qatar						
A71CW	40	480				800
EUROPE						
Aaland Isl						
OI0/OH3TY	160	900	30	2		2812
Bulgaria						
LZ1LZ		100	60	72		799
LZ2TW			77	32		209
LZ4UU		675				675
Czech Republic						
OK1AD		750				750
OK1AVY		240				240
OK1DRQ		490				490
OK1FJD	10	315				440
OK2EQ		150	1	8		280
OK2FEI		440	1			504
Denmark						
OZ1EUO		385	1			448
OZ4FF		5	2			18
OZ5DX		1595				1595
OZ8SW		100				100
England						
G3GLL	40	700	16	2		1632
G3JJZ	10	240				350
G3WRR		80				80
G5MY		520	1			594
Finland						
OH1TN	320	950	187	2		5044
OH6IU		5	54			98
OI6YF	10	45	15			252
Germany						
DJ0SH		200				200
DL1DQY		120				120
DL3RD			70			70
DL5AUJ		90				90
DL6YK	10	1035	48	18		2641
Hungary						
HA3LN		20				20
HA4YG		200				200
HAM5AWH		200	28	2		490
Iceland						
TF3DX		20				20
Latvia						
YL2KL	10	360	130	8		1653
Lithuania						
LY1DR			120			120
LY2BN		630				630
LY3JY		855	30	8		1680
Moldova						
ER1OA		90	25	2		333
Norway						
LA7AK	10	150				240
Portugal						
CT1YH	40	45				175
Poland						
SO5TW		480				480
SP5GH		630				630
SP6CES			1	2		6
SP8BAB			36			36
Russia						
RA4NW	40	1375				1885
RU6BV			80			80

RV1AB		20			20
UA4AGP		315	70	2	855
UA4QGO		350	30	32	1024
U5WF	10	1035	210	18	3942
UA6LTI	200	2800	88	50	8401
Spain					
EA1AUI		1050	30	8	1955
EA2BNU		80	1		105
EA5CKP	90	300	72	2	1504
EA5FID		225			225
Sweden					
SM2DMU	10	315	120		1120
Switzerland					
HB9ADD	40	1740	99	8	4500
HB9DX		855	64		1751
HB9IK	40	1035	192	8	3875
Ukraine					
UR5MVZ	1170	2600	275	48	13356
UR6QA		1265			1265
US1IDX	90				90
US9QA		270			270
UT3C		350			350
UX7I		300	120	8	1104
UX0HA		385			385
UY0ZG		240	25	8	637
Yugoslavia					
YU7SF		5	1		12
SOUTH AMERICA					
Peru					
OA4FW		40	88		310
NORTH AMERICA					
USA					
WA1FCN		520			520
WA2VQV		80			80
K3ZO	520	2940		32	7392
K7JYE		1920			1920
Multioperator					
Oceania:					
Japan					
JA1YAO	40	800	135	234	12	4704
JK3ZQJ	360	950	154	70	63	7140
Asiatic Russia					
RA9ANR	160	350	4		176	2394
RK9JWW		240	104	154		1575
RK0Q	40	2380	208	8		5720
Russia					
RW6AWM		175	16	2		410
RZ4AYT	10	100	16	2		410
SWL					
JA4-4665/1		5	6	198	84	816
Belgium					
ONL-383	40	200	4			558
Slovakia					
OM3-27707		200				200
Russia					
UA3-155-28		20	1			33

Check Logs:
DL3NEO, EU2MM, LZ2AU, OZ7QB, UA6ART, UA9XS, VK3KS, VK3XB, W9YCV, ZL1ALZ, ZL2VS, ZL4GU

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Divisional Notes

Forward Bias – VK1 Notes

Hugh Blemings VK1YYZ

Recent Happenings

A month of good news for the Division with, amongst other things, the donation of valuable equipment and funds for the Division and its WICEN activities, a new harmonic for one of our local operators, and rumours of a winner of the competition mentioned last month.

Mr Nick Arley kindly donated an assortment of HF gear including a TS-520S in beautiful condition, an antenna tuner, a KR-400 rotator and an Oskerblock from the estate of Richard Barnes VK2BTM. This equipment will be used to equip the Division's portable WICEN station that is presently under construction.

A donation was received from the Brindabella Motor Sport Club in recognition of the efforts of local amateurs in supporting a round of the NSW Rally Championship that was held in Canberra in May this year. Fiona McCubbin-Mee, who presented the cheque on behalf of the BMSC, was most apologetic for the delay in its arrival; it seems she and I use the same filing system...

Our congratulations and best wishes go to Bernie VK1KIP and his XYL Karen on the arrival of Natalie – great news! Natalie arrived on 7 October at some 10 lb $^1/_2$ oz; she and Mum are doing well.

1998 Committee

The time of our AGM is rapidly approaching and a number of our existing committee members will be retiring from office at the end of this term. For my part I will be seeking re-nomination and re-election to the role of President if the membership so desires.

I'd encourage our newer members to consider joining the committee and having their views incorporated into the direction of the Division in the coming year, doubly so if you don't like the present heading! The committee meets for around two hours once a month in addition to various exchanges by e-mail, packet or voice. It need not be an onerous undertaking and, indeed, we strive to be as efficient as possible in order to allow people to enjoy the hobby itself and meet their other commitments. Give it some thought?

Coming Events

Our November meeting will be held on the 24th at the usual Griffin Centre venue. It will be our last meeting for the year and so will be a social gathering. An assortment of warm and cold beverages, as well as snacks, will be supplied and we look forward to your attendance. Family/spouses are, of course, most welcome to attend.

The WICEN exercise to be held in conjunction with the FAI Rally of Canberra will take place on 28 to 30 November. This is an excellent opportunity to promote the hobby and your participation is welcome whether you be an old hand or newcomer to the activity.

See you at the next meeting!

VK2 Notes

David Thompson VK2NH

The Technology of It All

You know that I was thinking about things pretty seriously last month after I had e-mailed the VK2 Notes off to *Amateur Radio*. My computer crashed and had to be re-booted again, complete with a reload of Windows 95 and my Word documents. It was

shortly afterwards that I was reading about research involving a new computer which is being developed with a processor speed about 1,000 times that of the fastest on the present market. Interesting, considering it is said that technology in the computer field increases two-fold each year. Couple that with the introduction of new computers that you can wear, and I would tend to label it a Quantum leap, especially if it all comes packaged with a stable operating environment.

Education on the Move

The NSW Division has been very concerned about providing the education necessary to help those who wish to enter the hobby of amateur radio. Well, soon we will have a new Novice course, supplemented by a bridging course which will take candidates to the AOCP level. The Division is expecting to have the Novice course ready before the end of the year, with the AOCP bridging course available early in 1998. The aim of the courses is to prepare prospective amateurs so they can be successful in the examinations and get their amateur calls. If you're interested, call the VK2 Divisional office and we will advise you of cost and times for starting the course, and how to get the study material. Be assured that the material is of a very high standard and deals with the examination curriculum nicely.

Advance Notice for AGM

Just a quick note at this stage to let you know that a date has been set for the NSW Division AGM and election of Councillors for the next one-year term. The AGM has been set for Saturday, 18 April 1998, while nominations close at 12 noon on Saturday, 7 March 1998.

Affiliated Clubs Conference

Last month we advised you that the Conference of Affiliated Clubs would be held at Amateur Radio House at Parramatta on Saturday, 15 November starting at 0900. There will be a good rollup for this event and we have confirmed that a visit will be made to the conference by Mr Bill Vlies, Sydney Area Manager for the Australian Communications Authority. It will be a great privilege to have Mr Vlies address the conference. One of the ACA's field officers will attend as well. Apparently they are no longer called radio inspectors. The conference is shaping up to be something to really look forward to!

Christmas Function

Saturday, 13 December this year is the day we all get together for a little Christmas cheer and fellowship to celebrate the end of the year and the coming holiday season. Any members of the Wireless Institute NSW Division are invited to attend. For details, phone the office.

Dural Site Looking Good

Congratulations to the Dural team which is engaged in renovating the building and surrounds on our transmitting site to the north-west of Sydney. There is a big cleanup underway and various improvements are being made to the area. One main improvement that has been made is the upgrading of the toilet facilities. They are outside as before, but are much better, due to the new sides, back and top and now, because of the see-through roof, it has great views, especially of the stars at night.

When the little-house was inspected before the renovations, it was discovered that the outflow from the facility was slightly lower than the inlet to the septic. The Dural Officer was heard to mutter that, *"at least the situation bears out the old Australian saying 'pushing **** up hill'"*.

E-mail Address

This might look very similar to last month's reminder about our recent change of Divisional e-mail address. If you are addressing e-mail to the office, please do so at *vk2wi@ozemail.com.au*.

If you would like to contact the VK2 Division regarding your hobby, please do not hesitate to contact the office or any of the Councillors. We will be only too pleased to hear from you. If you would like to get in touch with an individual Councillor, just contact our Divisional office and it will be arranged. Our freecall phone number is 1 800 817 644 and our address can be found on the WIA Divisions' page at the back of this magazine.

Next Month

Next month we'll have more to report, including arrangements for the holiday period, broadcast dates and times, and office opening hours; but if you have anything you would like us to include as VK2 news, send it to me at PO Box 82, Springwood NSW 2777 or by e-mail to *dthom@penrithcity.nsw.gov.au*

VK3 Notes

Barry Wilton VK3XV

New 10 m Beacon

The North East Radio Group intends to install a new 10 m beacon at its repeater site in Kangaroo Ground. It is proposed that the new beacon will operate under the NERG current repeater/beacon licence, VK3RMH. Transmit power will be 20 W into an omni directional, vertically polarised antenna. The operating frequency will be advised as soon as it is allocated.

Turbo Tutorial

By the time this magazine goes to press, WIA Victoria will have conducted its 1997 "Turbo Tutorial" on the weekend of 18 and 19 October.

This highly specialised training weekend is designed to assist Novices to upgrade to full call theory and, as usual, all places were filled.

It is intended to run more of these week-end courses next year at different venues in order to provide easier access for those interested.

Increasing Interest in VHF and UHF

There has recently been a strong resurgence in interest in RF transmission techniques in the VHF, UHF, and SHF part of the spectrum. This rise in interest is attributable, in part, to the increasing pressures associated with HF transmission interference problems and the erection of antenna masts in the metropolitan area. Six metre enthusiasts are more active as propagation improves with the new solar cycle. More members are becoming interested in EME.

VK QSL BUREAUX

The official list of VK QSL Bureaux. All are Inwards and Outwards unless otherwise stated.

VK1	GPO Box 600 CANBERRA ACT 2601
VK2	PO Box 73 TERALBA NSW 2284
VK3	40G Victory Blvd ASHBURTON VIC 3147
VK4	GPO Box 638 BRISBANE QLD 4001
VK5	PO Box 10092 Gouger St ADELAIDE SA 5000
VK6	GPO Box F319 PERTH WA 6001
VK7	GPO Box 371D HOBART TAS 7001
VK8	C/o H G Andersson VK8HA Box 619 HUMPTY DOO NT 0836
VK9/VK0	C/o Neil Penfold VK6NE 2 Moss Court KINGSLEY WA 6026

Interest in this area is not confined to the city dwellers and activity in a number of country areas is rapidly increasing. The WIA Eastern Zone ARC is currently in the process of installing a new 1296 MHz repeater at Mt Tassie. This device will be operating on a frequency of 1273.350 MHz Tx, 1293.350 MHz Rx, under the VK3RLV callsign.

WIA Victoria is considering reviving the old VHF/UHF group (possibly under a new name) if there is sufficient interest, and is interested in hearing from any members who would like to be actively involved.

RF Modem Problems?

CyNET Comms has released a radio modem for process control applications. The 405U modem has been specifically designed to use with PLCs, smart transducers and data loggers.

The units will accept RS/232 or RS/485 data connections and transmit this data by radio to a remote unit. **The transmission range is stated to be 5 or 10 km** and applications include the transmission of data between buildings, across streets, or through industrial plant.

The 405U units will operate on frequencies in the 400/500 MHz UHF band.

WIA Victoria is currently investigating any possible effects of this equipment on the 420 to 450 MHz amateur band.

Council Meeting

The WIA Victoria Council met on Saturday, 20 September in an all-day meeting to discuss a number of issues and forward plan for 1998.

Agenda items included the 1998 budget, the Internet Web site and its future, VK3BWI and the loss of the Lyndhurst site, Federal finances, and a range of new membership services to be introduced.

Council noted that the WIA Victoria Web site has proved to be successful and has contributed to the recruitment of new members in recent weeks.

The dissemination of current news and information to members remains a matter of concern, and the interest and assistance of a willing and capable member is needed if we are to succeed in this area.

VK5 Notes

Ian Hunt VK5QX

The following notes are adapted from material used in a recent VK5WI Divisional Sunday Morning News Broadcast.

History, Clubs and Constitutions

A committee, basically independent of the Divisional Council, has been appointed to look at revision of the Divisional Constitution. There are good reasons why the matter is being handled in this way and I would expect you to see why this committee should be independent in its approach.

Let me provide some background to give a historical perspective.

It was foreseen, perhaps 20 years ago, that continuing demographic and social changes would sooner or later require some State reorganisation of the WIA. Eventually we find exigencies thrust upon us when time has overtaken our planning processes.

Just how successful an organisation becomes as a result of such forced change can depend on understanding what has actually occurred. It may seem that I am speaking in riddles; however, I shall try to enlighten you.

There has been a warning of change to come in what has taken place in the Eastern States. Sydney, for example, has become a very large city and with its growth we have been able to see the effects which can occur and problems which can result.

The New South Wales Division of the WIA used to have Monthly General Meetings in the same way that we in this Division still have. As the city grew larger, people found that traffic densities increased, distances from the "outer" suburbs to any central point naturally became greater and, with these and other allied factors, people became far less enthusiastic about travelling to meetings held at a central city location.

At the same time, separate Radio Clubs began to be formed (yes, there had been some clubs existing for a while). People gradually found it far more convenient to attend their local Radio Club rather than a monthly meeting near the city centre.

A direct result of this has been the abandonment of Monthly General Meetings of the VK2 Division with a different approach needed towards ascertaining the needs and wishes of the members. Also, there is only one Annual General Meeting of the Division.

The likelihood of such a situation, as indicated above, was foreseen. It is still somewhat early to make any judgement as to just how successful any administrative changes have been in respect of the New South Wales Division.

This trend, which occurred first of all in the Sydney area, has been repeated in Melbourne and, perhaps to a lesser degree, in Brisbane. In fact only the VK1, VK5 and VK6 Divisions still hold a Monthly General Meeting.

The VK7 Division seems to present a somewhat different case with the population centres in that State being concentrated in two different locations (perhaps lessons can be learned from the VK7 Division based on how they administer their affairs).

Here in the Adelaide area I see us as approaching the above situations. More radio clubs have sprung up within the Metropolitan area and these surely must be meeting many of the needs of their local supporters. So, do we need to make changes to the way the Division operates?

Such changes would undoubtedly affect the way the Division is set up, and in turn have an impact on the desired content of the Divisional Constitution.

There are many aspects requiring attention. Amongst these is the role which the individual clubs can play and most certainly the situation of country members in the overall plan.

So, now you can see just what I was driving at when I provided the subject title above.

I do not claim this particular presentation provides a comprehensive coverage of all aspects which need to be looked at.

Any decisions made regarding organisation and constitutional changes must be made in a considered and rational manner. This means, in turn, that adequate time must be allowed for the process of consultation with members to be thorough and comprehensive.

Plenty of opportunity will be provided to allow you to have your say. Your Divisional Council does not claim to have all the answers and recognises the fact that your input and advice is needed.

I trust that bringing this to you in this way will provide an incentive towards your contribution and also some guidance as to where you, the member must, as a matter of importance, fit into what I hope will be a most active discussion.

Remember that here we are planning for the future and that it is imperative that we make the right decisions. Your guidance in a collective manner can play a major part towards seeing that we "Get It Right". Please think about it and let us know what you think.

Retrospective Comment

Following release of the above material, I received comment from a correspondent in VK2 which indicated that I may have been wrong with regard to the reasons for changes which occurred in that state.

Whilst I accept his explanation as to the VK2 scenario I do remember discussion which took place during at least two Federal Conventions back in the 1960s era where the demographic problems were referred to in connection with that state. These certainly, to my mind, must have played a part in the ultimate turn of events. However, I accept correction where the comments come from someone closer to the action.

My correspondent made some very valid points which reinforce quite a few points which I have been trying to convey to you. I will deal further with these in future notes for this column.

"QRM" News from the Tasmanian Division

Robin L Harwood VK7RH

Your Divisional Council met on 20 September and discussed several ongoing matters. We view with some concern recent developments in the Federal arena and it was decided that our Divisional President, Ron Churcher VK7RN, would attend the next Federal Council meeting, together with our Federal Councillor, Andrew Dixon VK7GL. Our alternate Federal Councillor, John Rogers VK7JK, is unavailable due to illness.

Council also decided to have new promotional material made, including membership forms and metal badges. This will probably be in co-operation with other Divisions. We also decided on a membership recruitment drive by circularising all amateurs in the state. It is to be hoped that this will, indeed, net new and renewing memberships.

Other matters raised included funding for repeaters following recent financial problems with some repeaters. Many have taken for granted these repeaters, using them without thinking that they need ongoing finance to keep operating. The problem seems to be universal as repeaters in other countries are having similar experiences. Have you supported your local repeater lately? I know that there are SYSOPS who would welcome assistance to keep these repeaters functioning.

John VK7JK is still convalescing and has to take it calmly. Andrew VK7GL has stepped in as acting broadcast officer and has done a sterling job getting the news to the rostered announcers. The weekly broadcast is aired at 2230 UTC Saturday (0930 EADT Sunday) and is repeated on Tuesday evening prior to the Tassie Devil Net at 0830 UTC on 3590 kHz.

The Northern Branch met in September at the premises of BOC Gases where modern welding techniques were demonstrated. It was a hands-on affair and I have received many favourable comments on the evening. The Northern Branch would like to thank Mr Peter Lees of BOC Gases, Peter Lyall of Lincoln Sales who went out of his way to provide the demonstration, and Lindsay Dawe who assisted the presentation. Thanks to Elwyn VK7ZEC for arranging a very successful evening.

The Southern Branch erected a station in the grounds of Parliament House on Saturday, 20 September as part of World Amateur Radio Day. I believe that there were other demonstrations close by completely divorced from amateur radio. Hundreds of motorcycle riders had a protest demonstration over the hike in Tasmanian third party premiums. Also, there was an aboriginal land rights protest.

I do not have the exact numbers involved with the operation of VK7WI/P, but I believe it was co-ordinated by Gary VK7JGD. As I have already mentioned, Divisional Council was meeting at the same time elsewhere in the city, yet we fielded at least two enquiries from individuals who thought the station was there. We redirected them to the location and also put in a plug for amateur radio.

The Australian Maritime College was the venue for last month's Northern Branch meeting. After the business was transacted, we had a very interesting talk about the Global Maritime Distress and Search System (GMDSS), which was given by Gary Hammond VK7JAL, a senior lecturer at the AMC. We also viewed the radar set-up. Some amateurs were later trying to diagnose faults in a marine transmitter. One even suggested firing it up on 20 metres!

We now can confirm that the Divisional Annual General Meeting will be held in Launceston on Saturday, 22 March 1998. The venue will be the northern campus of the University of Tasmania. Rooms have been set aside as from 9 am, and the day will be concluded with a bistro meal in the evening. I am certain that further details will be given here later, as well as over VK7WI.

The North-western Branch will be continuing their tradition of having their annual Christmas Dinner at the Bass and Flinders Motel in Ulverstone. Highlight of the evening is the presentation of the Joan Fudge Memorial award. Bookings should be made by now with David Spicer VK7ZDJ on 0364 25 2030.

Meetings for November are as follows: Southern Branch on Wednesday, 5 November at 2000 hrs at the Domain Activity Centre; North-western Branch on Tuesday, 11 November at 1945 hrs at the Penguin High School; and Northern Branch on Wednesday, 12 November 12 at 1930 hrs at the Alanvale campus of TAFE.

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FTAC Notes

*John Martin VK3KWA, Chairman, Federal Technical Advisory Committee**

Six Metre Band Plan

The new 1998 Call Book will include revisions to the 6 metre band plan as discussed over the last few months.

The band segment below 50.150 MHz is recommended for international DX only, with the international calling frequency on 50.110 MHz. All other operation should be above 50.150 MHz, with a new Australian calling frequency on 50.200 MHz.

This will bring us into line with changes being made in Europe and North America, and make it possible for everyone to coexist without any conflicts. So, please spread the word: let's have a fair go for everyone. See you on 50.200!

Our two summer VHF contests, the Ross Hull Contest and the VHF-UHF Field Day, will both include 6 metres – but with an absolute ban on contest activity below 50.150 MHz.

160 Metre Band Plan

More comments have been received on the 160 metre band plan: from Mike VK6HD, Steve VK6VZ, and Bob VK2AVQ.

VK2AVQ suggested a DX CW segment from 1826 to 1836 kHz, and a DX SSB segment from 1837 to 1850 kHz. VK6HD and VK6VZ both agreed that the international DX CW window is from 1820 kHz to 1838 or 1840 kHz, and we should follow suit.

Both VK6HD and VK6VZ disagreed strongly with the comment that there is no European activity below about 1835 kHz. VK6VZ said that all of his European CW contacts over the last three years have been made below 1835 kHz. He supplied a log of contacts, most of which were made around 1824 kHz. VK6HD also supplied a log of DX CW contacts made between 1822 and 1827 kHz.

I can understand that 160 metre operators may disagree about the use of frequencies like 1825 kHz. But what to do when some operators say that there is no European activity below 1835 kHz, and others produce logs which say otherwise?

There is also disagreement about using the secondary allocation above 1825 kHz. Some operators do not feel that the band plan should encourage people to move out of the primary segment. On the other hand there is the point that the band below 1825 kHz is secure, and we should make more use of the higher part of the band, especially above 1850 kHz. The band is quite narrow, but we do not stand much chance of getting any more spectrum space if we are not making effective use of what we already have.

Call Book Data Base

At the time of writing I am finishing off the data base listings for the new Call Book. I would like to thank the following for supplying information for the update. Beacons: VK3OT, VK6HK, VK7XR. Repeaters: VK1KCK, VK3XV, VK3JWZ, VK4EJR, VK6UU, VK7AX. Packet: VK1KCK, VK3AVE, VK4KWM, VK6UU, VK7AX. Apologies to anyone I may have left out of this list.

The new Call Book will include a new Packet Radio Directory, with the packet repeater list and BBS directory merged into one. A great deal of information has been sifted, but if there are any errors I would be grateful to receive the details, which can be published in this column. The same goes for the beacon and repeater lists.

**PO Box 2175, Caulfield Junction, VIC 3161*

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How's DX?

*Stephen Pall VK2PS**

The increase of the solar activity during the past months, has changed the operating habits of many DXers.

The steady rise of the 10.7 cm Solar Flux which, in turn, is a reflection on the increase of the sunspot numbers, was expected and joyfully received by many of us.

The flux index numbers in the middle of July 1997 were in the low 69, 67, 68 range. By August these figures climbed up from 71 to 92. The rise continued during September, reaching 102 on 8 September and a peak of 119 on 9 September when the Sun's activity was described as "moderate". The cyclical decline came afterwards, the flux number being 88 on 30 September.

Propagation has changed on the bands. How? On 20 metres the traditional long path propagation to Europe has returned from around 0500 UTC to about 0700 UTC. Direction has changed to short path around 1100 UTC and the 20 metre band was open sometimes even until 1500 UTC.

There is a marked improvement on 15 metres and even 10 metres is producing some good DX to the north and to the west coast of North America around 2400 UTC.

The 40 metre band is open for DX from around 0500 UTC for at least 10 hours. The propagation was excellent during the VK/ZL/O phone contest.

This is now the time to check our equipment to make sure that it functions properly when the real "big" season opens. Antennas, coax, earthing systems, CW keys, even computers, towers, masts and guy wires should be checked, not only for electronic soundness but also for physical strength and stability because the stormy and windy season is just around the corner. Like a good boy scout, "be prepared" for seven years of good DXing.

Friends of Marconi

The replica of the monument celebrating the first wireless contact between the United Kingdom and Australia was unveiled at the old Marconi Caernafon Long Wave Transmitting Station in Wales, United Kingdom on 12 July 1997 (see *Amateur Radio*, July 97 issue). The presentation and unveiling was done by Jo Harris VK2KAA, Historian of the WIA NSW Division in front of a large assembly of local international and diplomatic dignitaries including press, radio and television reporters and amateurs from many neighbouring radio amateur clubs. Several descendants of the Ernst Fisk family were also in attendance.

The event was organised by the nearby Dragon Amateur Radio Club at Waunfawr near Caernarfon with the assistance of many local organisations.

In Britain, the sending of the first wireless message was forgotten until interest was reviewed by the Dragon ARC staging a special event in 1993 with the callsign GB2VK celebrating the 75th anniversary of the first direct wireless message. In response, WAHRA (Wahroonga Amateur Historical Radio Association) was established and activated the special call VK2WAH. This special callsign and GB2VK have been on the air ever since on 22 September each year.

Libya – 5A1A

Members of the "Rhein Ruhr DX Association", a group of four German operators, will be on the air from the well known club station 5A1A in Tripoli, Libya. They intend to be active from 24 November

Jo Harris VK2KAA with Dewi E Roberts GW0ABL at the Marconi monument replica unveiling ceremony.

until 4 December. The activity will coincide with the date of the "CQ World Wide" CW DX Contest which will take place on the weekend of 29 and 30 November.

Aims of the expedition are to operate on all HF Bands including 160 m and WARC Bands, propagation permitting; to be active on CW, SSB and RTTY; and to have two stations with amplifiers on air simultaneously as often as possible.

The team consists of Andreas (Andy) Luer DJ7IK, Dieter Voss DL3KDV, Felix J Riess DL8OBC, and Thomas Goetzfrield DL1GGT. Internet facilities will be used to upload logs to their Web page and they will welcome comments, suggestions and information about band openings by e-mail.

The group promises a speedy QSL reply service. The QSL manager, for this operation only, is DL3KDV. Cards can be sent via the QSL Bureau or directly to: Dieter Voss DL3KDV, Friedrichsthat 21, D-51688 Wipperfuerth, Germany.

The expedition does not require any money in exchange for a QSL Card, except the usual cost of return postage of at least one "green stamp" or one IRC.

Felix DL8OBC reports, *"All equipment is currently on its way to Libya. We will leave the equipment there after our operation, so that it can be used by the Libyan operators of 5A1A. All this has placed a heavy financial burden on the team so, if you can, please consider making a small donation for the cause."*

Donations are welcome to assist the expedition and amateur radio in Libya, and should be sent to Felix J Riess DL80BC, PO Box 1253, D-30984 Gehrden, Germany.

The operators met the Libyan amateurs (Ali, Abubaker and Mosbach) at the German "Ham Radio Fair" in Friedrichshafen at the end of June. They also met the Austrian members of the 5A28 team which operated the special event station from 31 August until 7 September celebrating the 28th anniversary of the Libyan Revolution. The 5A28 team was organised by the Icom Radio Club OE1XIC of Vienna, Austria and made 11,404 QSOs.

DXCC – 2000

I reported some time ago that the ARRL has commissioned a special committee to evaluate the present DXCC program and to make recommendations to improve the status of the DXCC. The summer edition of *INDEXA*, the news bulletin of the International DX Association, reports that the committee has prepared an evaluation which will be presented to the ARRL Board at its January 1998 meeting.

Here are a few snippets from the interim report:

A. Definition of a DXCC Country.

Clarification of Point 1. Government.

The country in question must be a member state of the United Nations, be a member of IARU, and have an official ITU callsign allotment.

Point 2. Separation by water.

The committee recommended the use of the metric system of measuring distances. The old "miles" distance was converted into kilometres which resulted in rounding down certain distance figures. The new distances are 350 and 800 kilometres. Minimum size of DXCC country is now described as "consists of two points separated by not less than 100 metres of connected land above the high tide mark as demonstrated on a chart of sufficient scale". For the purposes of this award any island less than this size shall not be considered in the application of the water separation rules. The former 10,000 square foot area was replaced with the 100 metre straight line. This method will make it easier to determine minimum size.

Point 3. Separation by another DXCC country.

The 75 mile requirement is replaced with 100 kilometres.

Point 4. Ineligible areas.

Embassies, consulates, monuments, diplomatic missions, demilitarised zones, neutral zones, buffer zones. No change.

B. The DXCC Award Structure.

The new DXCC structure will be divided into two major categories: 1, The Mode Award Program, and 2, The Bands Award Program. There will be a number of new awards:

a. The DXCC 2000 Championship award.

b. The DXCC 2000 Challenge Award.

c. Special DXCC 2000 Award (working 100 and more countries in the year 2000. No QSL cards will be required).

C. Publication of Honour Rolls and other written listings, DXCC Year Book, annual lists etc.

There will be a change in the presentation of such lists.

Finally, the present fee structure will be changed in such a way that at least 90% of the cost of the DXCC program will be borne by those who use the service, ie the DXers themselves and not the non-DX ARRL members.

Future DX Activities

* YL operator Tere 8R1ASF is reported to be active from Guyana for the next two years. QSL via XE1MD.

* Phil VR2CT (ex-VS6CT) will be active as 9M6CT from 20 October to 16 November.

* It is rumoured that David K3LP will use the call A61AJ from 22 November to 2 December. QSL to David K3LP, formerly AA6DC.

The old Marconi long wave transmitting station near Caernarfon, Wales.

* Alex W2OX, will take part in the CW section of the CQ WW Contest as V47KP. QSL via K2SB.

* Dias CT4KO will be in Angola for at least one year using the call D2AI, starting 15 September. He is expected to operate SSB on the usual HF Bands. QSL via Antonio Pereira CT1EGH, R Guerra Junqueiro 25A, Vale de Milhacos, P-2855, Corroios, Portugal.

* 9G5VJ will take part in the CW section of the CQ WW Contest on 29/30 November, operated by a group of British amateurs. QSLs via home calls. 9G5VJ via G4ZVJ; 9G5SW via G3VMW; and 9G5WD via G4RWD.

* Dave AG8L will be active from the US Virgin Islands for one week in October and one week in November. During contests he will use the callsign WP2Z (QSL via KU9C). Outside the contests the call will be KP2/AG8L and QSL via KM6ON (now NN6C).

* The intended Spanish DXpedition to Annabon Island, 3C0DX, which was postponed from May 97 to 11 October 1997, has been abandoned due to lack of visas which were not forthcoming from the relevant authorities.

* Edin T97M will operate during the CQ WW CW Contest from the station of Abdullah using the call 9K2GS. Outside the contest he will use the call 9K2/T97M.

* Chris SP5EXA (ex-A71CW) is now in Oman, and will be active soon as A45XR. Chris will be in Oman for five years.

* Rick VQ9AI in Diego Garcia can be found on 14260 kHz at 1300 UTC daily. QSL to Rick Lewandoski, PO Box 367, Cascade, WI 53011-0367, USA.

* Jim VK9NS on his way back from the UK will travel to India where he plans to operate with his call VU2JBS. He will also travel to Bangladesh where he is licensed as A21ZA. Jim hopes to visit Bhutan where, some years ago, he was active as A51JS. He will meet the Bhutanese Ambassador to Bangladesh in Dhaka for further discussions.

* TT6SE and TT6EB will be in Chad until 15 January 1998. QSL via F6FNU direct only.

* Theo DJ1RL and Hans DK8FB will be active from Mayotte using the FH prefix with their home call. QSL via home calls.

* The forthcoming CW section of the CQ WW Contest, which will take place on the weekend of the 29 and 30 November, gives the opportunity to work some of the rare ones specially activated for the contest.

* K8DD, AC8WW and N8KR will be in the Bahamas between 25 November and 1 December using the contest call C6A/K8DD. Outside the contest they will use their individual callsigns with the C6A prefix. QSL via home calls.

* The St Paul DXpedition, CY9DX, has been replaced with a Sable Island activity for ten days starting 24 October. They will use the call CY0DX.

* Terje LA3EX/JW3EX will go to Jan Mayen on 10 October and will be active until March or April 1988. QSL via Terje Berg, 8099 Jan Mayen, Norway.

* Mathias JW5NM will stay on Svalbard until mid 1988. He plans to be active on 160 metres.

* The Geneva ITU Club station 4U1ITU will be active during the World Radio Conference 1997 from 27 October to 21 November.

* The callsign DX1S will be used in all future contests by the Filipinas DX Society.

* Joe K3KN will be operating as EL/K3KN until 6 or 7 November on SSB on 40 – 10 metres. He will operate from the US Embassy in Liberia. QSL via KB3U.

* Paul WC5P will be on Christmas Island as T32BE from 19 November to 2 December. QSL via WC5P.

Interesting QSOs and QSL Information

* 5X1P – Joe – 14015 – CW – 0532 – Sep. QSL via Brian J Poole G3MRC, 18 Grosvenor Ave, Kidderminster, Worcs DY10 1SS, UK.

* HZ1AB – Ron – 14005 – CW – O438 – Aug. QSL via Leo W Fry K8PYD, 5740 North Meadows Blvd, Columbus, Ohio, 43229-4165, USA.

* ZK1MJF – Morris – 14164 – SSB – 0516 – Oct. QSL via M J French ZL2MF, 10 Gurney Road, Belmont, Lower Hutt, 6009, New Zealand.

* P43DJ – Dee Jay – 14164 – SSB – 0550 – Sept. QSL via Djurre Vrieswijk, PO Box 417, Aruba Island, South America.

* SV2ASP/2 – Monk Apollo – 14191 – SSB – 0616 – Sept. QSL to Apollo Monachos, 1 Moni Dochiariou, GR-63087, Dafni AG Orous, Greece.

* A71BY – Jaber – 14195 – SSB – 0629 – Sep. QSL via Jaber Bin Hamed Mohd Al Thani, PO Box 432, Doha, Qatar.

* OY2H – Hans – 14042 – CW – 1257 – Sep. QSL via Hans Jacob Eli Egholm, Strond 93, FR-100, Torshavn, Faroe Islands, Europe.

* 4K7DWZ – Rashad – 14254 – SSB – 1341 Sep. QSL via Box 116, Ktoprak 81031, Istanbul, Turkey.

* 9Z4CT – Nigel – 14164 – SSB – 0514 – Sep. QSL via QSL Bureau, Trinidad and Tobago Amateur Radio Society, Box 1167, Port of Spain, Trinidad and Tobago, South America.

* ZK1XXP – 14023 – CW – 0728 – Sep. QSL vie Robert Pond WA4YBV, 9 River Cove, Portsmouth, VA, 23703, USA.

* 9X0A – Andy – 14195 – SSB – O455 – Sep. QSL via Andy Fyodoroff RW3AH, PO Box 899, Moscow, 127018, Russia.

* FW5XX – Marcel – 14213 – SSB – 0515 – Sep. QSL via Marcel Dehonin ON4QM, Everest 130, B-1932, Sint Stevens Woluwe, BT Belgium.

From Here There and Everywhere

* The Japanese Amateur group (consisting of Atsu VK2BEX, Ken VK2IAZ, and Ken VK2IY) using the callsign VK2IOM (Island of Montague), made 1600 QSOs during a 28 hour operation using an Icom IC-756, an R-7000 vertical antenna, and an HL1K 400 W amplifier.

* Taiwan (BV) started to use the new EX prefix.

* Phillip 5W1AU, the well known identity on Samoa and President of the Samoan ARC, is now a silent key. He had operated the QSL Bureau on the island out of his own pocket since 1971.

* Frank YJ8AA, reports that his planned

visit to a variety of islands in the northern part of Vanuatu is still on track, but delayed. The boat which will carry him is undergoing sea trials now.

* Australia and New Zealand changed their clocks to daylight saving (summer time) in October. The clocks were advanced by one hour. New Zealand, Tasmania and Macquarie Island started on 6 October, the rest of Australia (except VK4 and VK6 which stayed on Standard Time) followed at the end of October. VK8 also remains on Standard Time.

* Monk Apollo SV2ASP/2 from Mt Athos has finished the monastery's building projects. This enables him to appear more often on the bands.

* Tom VK0TS is leaving Macquarie Island at the end of November. He does not know whether his replacement has an amateur licence or not.

* There is still a controversy about the use of the AP2AP call sign by Hiro JA1EZM. There are about 250 licensed amateurs in Pakistan of which only 20% are active. CW activity from Pakistan is especially rare. Hiro was using the callsign of a local Pakistani amateur whilst testing a coastal radio station which he is building with JA8WPP. Only the future will tell whether the callsign was used legally or not.

* Correction to my item "Australian Amateurs on the ARRL DXCC Honour Roll" which appeared in September *Amateur Radio*. In the Phone Section, VK5WO was omitted from the 328 group – with deletions, his number is 328/360. VK5WQ should be 328/333, not 360.

* Eric FT5ZG on Amsterdam Island is very seldom heard. His usual operating frequency is 7006 kHz on CW. The linear sent to him by the Clipperton DX Club was not usable on arrival, due to damage in transit. Eric leaves the island in November.

* There is a continental saying that a good priest studies until his death. One of our very experienced VK DXers was most surprised not so long ago, when a ZL Novice station started to advise him, well meaning of course, as to how to be successful in working DX stations. During the conversation the ZL amateur proudly announced that he had already worked five DX countries!

* The February 1997 DXpedition by a German amateur group which activated the callsigns S21XZ, S21XY and S21XX, logged 12,839 QSOs representing more than 150 DXCC countries and all continents. QSL manager DL3NEO has been busy since mid-June sending out the cards.

* The DXCC Desk announced on 3 September that they received 233 applications with 15,244 QSL cards for new awards and endorsements during the month of August.

The R-7000 vertical antenna of VK2IOM, IOTA station on Montague Island.

* The special event station GB70GBI was active early September celebrating the 70th anniversary of the inauguration of the Marconi Beam Wireless Station service to India.

* The special event station YE8Q was active from Sulawesi (OC-146) in September. QSL via YB8QD, Box 198, Manado, 95001, Indonesia.

* The NCDXF/IBF international beacon is now operational also from New Zealand as ZL6B on 14100, 18110, 21150, 24930 and 28200 kHz. 5Z4B is also operational on the same frequencies. Out of the planned 18 beacons in the world-wide network, 16 are now in place.

* 9A97WPC was the special event station during the 6th World Puzzle Championship being held in Koprivnica, Croatia. QSL via the Bureau or via 9A3KQ.

* If you worked ZD7HI on CW, do not QSL as it was a pirate. Chris, the real ZD7HI, does not operate CW.

* Vance W5IJU intended to operate from KP5 Desecheo Island. The authorities refused his request because there are "unsafe and dangerous conditions" on the island.

* The name of Western Samoa was changed to just Samoa in July 1997. The call prefix remains as 5W.

* EA4DX was active from the Maldives as 8Q7XX. QSL via home address direct only.

* The Willis Island DXpedition, VK9WY and VK9WM, made 40,265 QSOs. QSL via ODXG Willis Effort, PO Box 929, Gympie QLD 4570. The group did not land on Holmes Reef as only a very small portion of the island is above the water at high tide. Not enough to set up a station.

* The special event station IR0MFP (Millennium for Peace) was active on 23 and 24 October and will be activated in the future every 100 days until the year 2000.

* The Date Line DX Association had a very successful expedition to Penrhyn Island in the North Cook Group. Three stations using the call ZK1XXP operated on CW, SSB and RTTY from 20 to 27 September. They made over 12,000 QSOs. QSL route is via Robert Pond WA4YBV, 9 River Cove, Portsmouth VA 23703, USA; or to WA4YBV via the QSL Bureau.

* The Midway-Kure DX Foundation DXpedition was active from Kure Island with the special call K7K. The seven member team was very active and was very good copy here in Sydney, practically on a 24 hour-a-day basis. QSL via Bob Johnson KF7LZ, 5627 West Hearn Road, Glendale, Arizona, 85306-4213, USA.

QSLs Received

R1FJZ (from Boris U3AJ); FS5PL (from KF0UI, CBA); J87GU (from DL7VOG, CBA); FT5ZG (7 m – F5RQQ); KG4ML (4 w – WB6VGI); and V31JP (2 w K8JP).

Thank You

Many thanks to my fellow amateurs whose assistance is very much appreciated. Special thanks to VK2XH, VK2DEJ, VK2KAA, VK2KFU, VK2TJF, VK5WO, VK9NS, GW0ABL, and the publications *QRZ DX*, *The DX News Sheet*, *425 DX News*, *INDEXA* and the *ARRL DXCC Desk*.

**PO Box 93, Dural NSW 2158*

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Over to You – Members' Opinions

All letters from members will be considered for publication, but should be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

More on Federal Problems

Peter Parker's letter "Federal Problems", in the September issue of *Amateur Radio*, was superb and shows the sort of great insight that we so desperately need if we are to save the WIA and amateur radio in Australia from a slow and agonising death.

My deep concern is that Peter's letter will be allowed to pass unnoticed into the scrap-heap of apathy.

IT IS VITAL THAT THIS MUST NOT BE ALLOWED TO HAPPEN.

Peter is spot on with his assessment of the big picture. His solution for the way ahead (he argues that the Divisions be disbanded in favour of a more unified National body), is reminiscent of the Branches system in New Zealand, which I found to be more democratic, more friendly with a distinctive "club" feel, and for which meetings were much better attended than the Divisional meetings in Australia. Any geographic area can set up a Branch if there are enough local amateurs interested enough to do so, so that Branches consist of just a few members to, for example, generally over 100 for Branch 27 in New Plymouth. And nearly everyone gets a chance to sit on the Branch committee, contribute to or edit the newsletter, teach, manage repeaters, etc.

WE MUST CONDUCT A REFERENDUM ON THIS ISSUE.

I suggest that a proposal to "re-invent" (with no half-measures) the WIA, be submitted to the amateur radio community in the form of a questionnaire, to be included in BOTH magazines so that the majority of amateurs can have their input on our future direction.

Peter Parker, if he agrees, would be the ideal person to formulate the draft proposal for this, and I would like to see him sent to New Zealand by the WIA as the "people's special representative", so that he could attend a provincial Branch meeting and discuss the mechanics of the system with NZART.

There is NOTHING more important than this issue to spend our money on (while there is still a little left), and nothing to be gained by lengthy consultation procedures. We just do it, or perish.

Chris Lowe VK6BIK
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VHF-UHF Contest Rules

The Rules for the two premier VHF-UHF Contests have been the subject of some discussion recently. Many competitors want some changes to the present Rules. I wish to present some views for the wider membership to comment on.

Firstly, the rules must reflect the objectives of the contest. Secondly, the rules should not, as far as possible, advantage contestants in one State over others. Thirdly, the rules should not change from one year to the next once a reasonable compromise has been reached.

Let me now turn to one of the particular contests, the VHF-UHF Field Day.

I believe the objectives for this field day include:

- encouraging activity;
- encouraging stations to venture out into the field;
- encouraging stations to operate on more than one band;
- encouraging home stations to provide field day stations with contacts; and
- encouraging operation at the higher frequencies.

If these points are accepted, then it follows that 6 m should be included as a valid band. Eliminating 6 m prevents a number of operators from going out in the field, particularly those in VK4 and VK6 where the band is more popular than 2 m. Certainly contest operation on 50.110 needs to be prevented. This can be done by not allowing point scoring contacts on that frequency or within +/-10 kHz of this frequency and disqualifying anyone found to have done so. The suggested contest calling frequency of 50.150 MHz should be used. A 40 kHz change in frequency should not cause problems for those with beams optimised on 50.110 MHz. Self policing and reporting of offenders will be required to make the avoidance of 50.110 MHz actually work. If it doesn't, then, as the sun spot count increases, there will be pressure to remove 6 m again.

As working DX is not on my list of objectives, points per km are not appropriate for scoring. One point per contact seems a good start. It encourages activity rather than just looking for the distant station. Allowing home stations to work each other also encourages activity.

To encourage multi-band operation, particularly on the higher frequencies, each band should be considered separately. That is, the same station could be worked on each band for scoring purposes as is now done. Of course, the scores for all bands are combined after multipliers are applied.

The number of grid squares worked is presently used as a multiplier. This is OK but I suggest that the number of portable stations worked would make a better multiplier. If the number of grid squares is retained, then I hope the number of portable stations worked will also be used as a multiplier as it encourages portable operation and minimises the temptation for home stations to just work other home stations.

The separate sections for home and portable stations should be retained.

A rover station that moves to a different grid square would count as a different station but a different operator of the same equipment at the same site would not. Any operator or person associated with a multi-operation station would not be considered a different station unless more than 5 km from the multi-operator site.

To encourage operation on the higher frequencies I suggest the following band multipliers be used. Note that, because the distance covered is not part of the bonus scheme, the multiplier roughly reflects the current ease of operating on 6 and 2 m compared to the higher frequencies.

Band (MHz)	Multiplier
50	1
144	1
432	2
1296	5
2400 to 10,000	10
Higher	25

Unfortunately, the days of working 50 different calls on two metres in a six hour field day seem to have gone; so, to make it worthwhile having a 6/24 hour contest, repeat contacts after three hours should continue to be allowed for scoring purposes.

Perhaps some bonus points should be awarded for backpacker stations. I suggest a bonus equal to 10 times the number of km the station was carried be added for each band. The minimum distance should be 250 m or 50 vertical m.

I have not included any bonus points for low power as a separate field day would be appropriate for QRP; maybe others have different ideas.

The usual rules about not allowing the use of active repeaters should apply.

Now for the Ross Hull Memorial Contest. I see the objectives as:

- encouraging activity;
- encouraging stations to work DX;
- encouraging stations to operate on more than one band;

- encouraging operation at the higher frequencies;
- conducting the contest over a specified time during the Christmas- New Year period; and
- arranging the scoring so that it is not necessary to spend the entire period in the shack.

The first two objectives are met by awarding points on a distance basis. One point per 100 km is a good basic scoring rate. This differs from the existing arrangement where 6 m is penalised because it more frequently has Es openings. 2 m has some Es openings, but tropo and aircraft enhancement are easier on 2 m and up than on 6 m. The distances covered can be roughly comparable.

By allowing one contact per call per band per UTC day, additional bands used will give higher scores as per the present rules.

To encourage operation at higher frequencies, I suggest a band multiplier system based on my estimates of the difficulty of making a DX contact.

Band (MHz)	Multiplier
50	1
144	2
432	4
1296	8
2400 to 10,000	15
Higher	25

The cap on 6 m, and the discrimination of distances based on presumed likelihood of troppo Vs Es contacts, have been removed. The lower multiplier on 6 m means that, even with a big Es opening, the total band score will not be much different to what could be scored by aircraft enhancement or reasonable tropo on 2 m.

The period of the contest could remain as 0000 UTC on Boxing Day to 2359 UTC on Australia Day.

The scoring could be limited to the top 50 contacts for each band. This will not stop some operators from living in the shack, but it will make it easier for others to get a full bag and is much easier to cope with than the best seven days.

The suggested advantage of the seven days option is that it limits contacts with the same station to seven per band. Unfortunately, the best seven days is hard to decide and the tendency is to make every day a big one, just in case some good propagation occurs. The top 50 avoids this.

If it is desirable to prevent having 30 contacts with the same station, then a rule limiting the number of contacts per call per band could be added. I suggest 20 repeat contacts be the maximum. I think seven is too few and discriminates against stations depending on whether they are in the city or the bush.

There is still the problem that stations will concentrate only on contacts of 400 km plus. This does not encourage the 25 W single Yagi station to come on, let alone compete. I therefore suggest that, in addition to the best 50 (DX) contacts, points be awarded for contacts with stations at any range, say an additional 50 contacts per band but on the basis of two points per contact regardless of distance. This will encourage the "big guns" to work the smaller and local stations without detracting from the aim of being a DX contest. The top 50 will bring the big guns closer together and make for a tighter competition, necessitating getting every extra point possible.

I realise that my suggestions may introduce some new problems as well as minimising others, but I hope some of the suggestions will be favourably received.

Ron Cook VK3AFW
7 Dallas Avenue
Oakleigh VIC 3166

(Although Ron's letter is longer than normally allowed, it has been published to encourage feedback to assist the Contest Manager. Ed) **ar**

Pounding Brass

*Stephen P Smith VK2SPS**

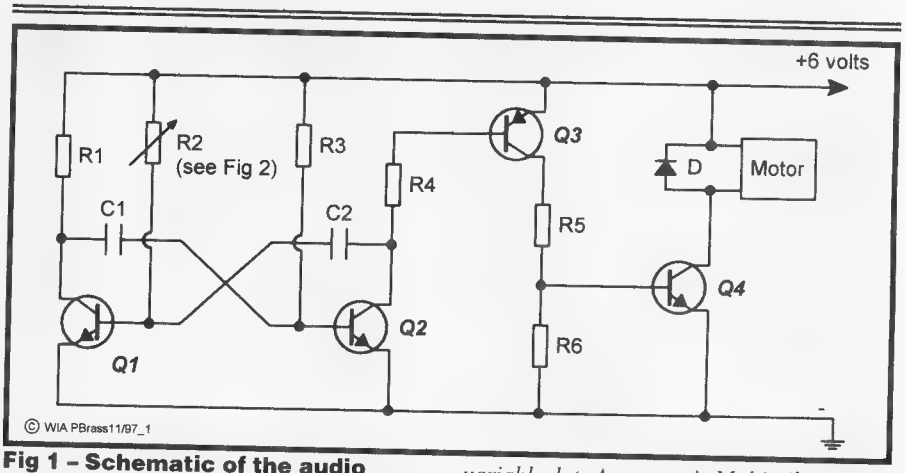

Fig 1 – Schematic of the audio cassette motor speed controller.

Q1, Q2	**BC548**
Q3	**BC327**
Q4	**TIP31**
C1	**100 nF greencap**
C2	**1 nF greencap**
R1	**2.2 k**
R2	**See text and Fig 2**
R3	**47 k**
R4	**560 ohms**
R5	**470 ohms**
R6	**1 k**
D	**1N4002**

This month we take a look at a cassette motor controller which controls the playing speed of a simple portable cassette deck. Beginners should find this device easy to build and it will help them with their Morse studies and future upgrades. I would like to thank Derek O'Brien for the enclosed circuit and circuit information. I'll now take a back seat and let Derek take over and explain his motor speed control.

"Herewith the circuit diagram for the speed controller I told you about in my last letter. On reading a copy of my letter I find that I should have called the controller a variable duty Asymmetric Multi-vibrator, the speed control being effected by varying the pulse length for which the motor is energised while the pulse frequency stays constant. This ensures adequate torque as the pulses of power are at the full voltage of the power supply.

"The circuit is quite straightforward. The time constant of the C1/R3 combination, which holds Q1 on and Q2 off, is much greater than that of the C2/R2 combination which holds Q1 off and Q2 on. R2, being variable, gives the speed control.

"When Q2 is turned on it gates Q3 on which, in turn, gates Q4 on, supplying the motor with a short burst of energy. The usual diode is there to absorb the inductive spike caused by the motor being turned off suddenly.

"I used a single pole 12 position rotary switch to provide the speed control resistances as shown in Fig 2. This gives 12 different speeds but, if it is thought that 12 speeds is excessive, all the switch positions need not be used, and the interposition resistors increased in value so their sum is the same as for 12 positions.

"When connected as in the diagram,

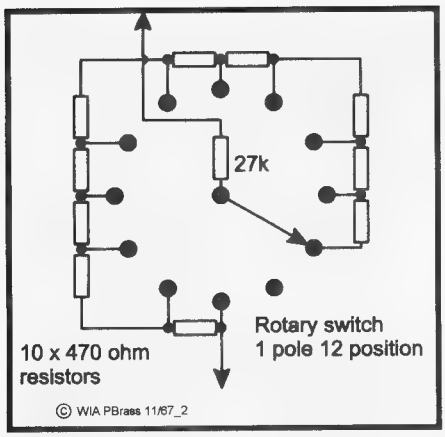

Fig 2 – Schematic of R2, the variable speed control.

rotating the switch in an anticlockwise direction gives speeds ranging from dead slow, when none of the resistors are in circuit, to full speed when the switch is open circuited. In this position, Q1 does not turn on, Q2 does not turn off, and the motor receives uninterrupted power.

"The on/off ratios for the recorder that I used may not be suitable for all makes of recorders. In fact, they were not ideal in my case; there was too great a reduction in speed between full speed and the next slower speed.

"The procedure I would recommend to set up the speeds is as follows:

1. Do not fit R2;

2. Run a tape at normal speed and time the speed of a paragraph of CW; or determine the time between two marker tones on the tape;

3. Wire a 50 k variable resistor in place of R2;

4. Adjust this resistor so that the speed is reduced to half full speed;

5. Measure this value (after disconnecting it from the controller), make up the same value with fixed resistors and wire this in series with the variable resistor;

6. Adjust the variable resistor to give a tape speed 10% lower than the maximum, if 12 positions and 10 resistors are used, or 20% lower if only six positions and five resistors are used;

7. Measure this value (after disconnecting it from the circuit) and divide it by the number of resistors used (this gives the value of the resistors wired round the rotary switch – these values should give a uniform change from full speed to half speed as the rotary switch is adjusted in an anti-clockwise direction); and

8. Wire in the rotary switch (with the resistors fitted) in series with the fixed resistor."

Thanks again, Derek, for this most informative article which, I am sure, will be of great assistance to a number of our readers.

**PO Box 361, Mona Vale NSW 2103*

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International Amateur Radio Union Monitoring Service (IARUMS) – Intruder Watch

*Gordon Loveday VK4KAL**

ORARI, the Indonesian Amateur Organisation, has requested more detailed information of the many illegal transmissions which they acknowledge originate from their country. Observers are asked to provide as much detail as possible in their reports. Names, places, organisation information, details of tasks, etc. Anything which may help to pinpoint exactly who the intruder is, or who he/she works for.

For our Region, the time to strike about intruders is now! Details of the recent Beijing conference are still fresh in the minds of those who can possibly do something about the problem. Details are also being sought about CB type operations being frequently reported in the 10 m band.

JARL, in their report to the Conference, have floated two worthwhile ideas. The first is that tapes of some intruders be swapped among Monitoring Service members. Some intruders are difficult to identify and are not heard throughout the Region. Tape swapping will probably eliminate that problem.

The second JARL idea is that long term members of the Monitoring Service should be given some form of award to recognise the dedicated service which they provide (we do this already in VK, with 37 of our Certificates of Merit being issued since 1985. FIWC). Both of these ideas have merit and the thoughts of MS co-ordinators in our region would be appreciated.

China National Radio (Radio Beijing) has been noticeably absent from monitoring reports since it was advised of the problem on 7100 kHz on 29 July this year.

In our own backyard we have, on 14.220 MHz, a news program at 2210 UTC, in English, A3E, from the BBC World Service. The signal appears to be H2 of 7.110 MHz. A check on these frequencies would be appreciated also.

My thanks to Rohan ZL1CVK, the Region 3 Co-ordinator, for most of the news.

**Federal Intruder Watch Co-Ordinator, Freepost No 4 Rubyvale QLD 4702 or VK4KAL@VK4UN-1. Tel: 07 4985 4168*

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Silent Keys

Due to space demands obituaries should be no longer than 200 words.

The WIA regrets to announce the recent passing of:-

R M	FOREMAN	VK2DKG
B (BRUCE)	GARDINER	VK3AIE
NW	SULLIVAN	VK3CTS
T (Tom)	DOWLING	VK4OD

Ken Beck VK4WKB

Amateur radio lost another of its old timers with the sudden passing of Ken Beck on 30 May 1997. Ken was spending a short holiday in Beijing in the company of his brother when he suffered a fatal heart attack.

Ken and his wife Lois settled in Port Macquarie when he retired from a career that, over 40 years, took him to distant islands in the Pacific region. He served in Nauru, Canton Island, Christmas Island, Fiji and Papua New Guinea, involved primarily in fuelling operations for the air transport industry. Many of the stations where Ken was stationed had poor, unreliable, and sometimes non-existent, public communications services, with the result that amateur radio played a major part in his life.

Ken held many callsigns, including VR2KW, 3D2KW, T31KW, VK2WKB and lastly VK4WKB when he and Lois moved to the Sunshine Coast.

Ken will be sadly missed by his many close friends throughout Australia and the Pacific region.

Ron Marschke VK4GZ
President
Sunshine Coast Amateur Radio Club

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Tell the advertiser you saw it in the WIA *Amateur Radio* magazine!

Repeater Link

*Will McGhie VK6UU**

Gateway on Air

After four years from the start of construction, and through the frustrating three year licensing phase, the Perth 29.120 MHz gateway is finally on air!

The equipment was put together over three years ago and placed on air. However, the gateway link from 29 MHz to the two metre repeater was not legal, so the gateway was turned off and the lengthy licensing process began. I learnt a lot from this process, particularly on how a relatively simple process can become bogged down. Most of the delays were of our own making. Lengthy delays in producing paper work, along with delays in delivering the paper work, added many months to what should have been a far simpler process.

Delays also with the ACA (SMA) should not have occurred to the extent they did in this licensing process. There were requests for information by the ACA that were repeated for the same information between the State and Federal sections of the ACA.

How we improve situations like this so that delays of years don't take place, I don't know, but change is needed. Perhaps we could deregulate the amateur service again.

The Gateway

The Perth 29 MHz gateway operates on 29.120 MHz FM, to a vertical dipole spaced off a tower to give best propagation to the east of Perth. The location of the gateway is 20 kilometres east of Perth. The gateway provides access to the two metre repeater VK6RLM, which is the callsign of the gateway.

At the time of writing, the 29 MHz input is open access. No CTCSS tone is required to access the 29 MHz input and hence be re-transmitted onto the two metre repeater on 146.750 MHz. Access the other way from the two metre repeater requires an 88.5 Hz CTCSS tone by the user on his two metre transmission. This is required as not all licence grades (NAOCP and NAOLCP) are licensed to operate on 29 MHz. Even though it is the gateway system that is doing the re-transmission on 29 MHz and is controlled by the gateway, the ACA will not permit these licence grades to be re-transmitted via the gateway.

The two metre repeater is a modified FM 828. The 29 MHz equipment is a modified Yaesu FT-757. The FT-757 is running 50 watts to a vertical dipole. The local VK6 WIA news is also transmitted via the 29 MHz gateway. This is done by a separate receiver on the WIA news frequency of 146.100 MHz, turning on the 29 MHz gateway transmitter when the WIA news CTCSS tone is received. All this happens automatically. The VK6 WIA news is broadcast every Sunday at 0930 and 1900 hrs West Australian time.

After a few days of operation there has been little QRM into the gateway from 29 MHz. However, in the long term I can see some form of protected access into the gateway will be required. CTCSS has the most options.

Gateway Options

Last month's *Repeater Link* suggested some ideas on how 29 MHz gateways could operate. For the moment, all use 29.120 MHz and require CTCSS access into the gateway on 29 MHz. The two metre input also requires CTCSS access, but for a different reason which has already been discussed. Comments here are only to do with the 29 MHz input-output. Further to last month's ideas I have the following to suggest.

Rather than prevent linking between gateways (due to licence requirements) by requiring CTCSS access into the gateway by the user, reverse the requirement. Allow open access into gateways on 29 MHz but encode gateway transmitters with CTCSS, and use this gateway encoded CTCSS to prevent linking between gateways. The 29 MHz gateway receivers have a CTCSS decoder fitted, but the tone they are looking for is on other gateways, not users. As soon as a particular CTCSS tone is received from another gateway, linking is inhibited between gateways. The suggested CTCSS tone on 29 MHz gateway transmitters is 123 Hz.

A further thought is that CTCSS user access could still be used if required due to QRM, by using a different tone to that required to prevent linking between gateways. This system would then allow the maximum flexibility. Gateway linking inhibiting by CTCSS, and open or CTCSS access for users. The final set-up is left to the gateway designers.

What are your thoughts on 29 MHz gateways? Now is the time to come up with a practical and inventive approach that can best utilise the gateway idea. Enhanced 29 MHz propagation is not far away due to the sun spot cycle.

Even More

Here is even more about gateways, but a completely different idea.

As we get older, many amateurs are unable to maintain a HF station anymore. The reasons can range from reduced income due to being on a pension, to living in a retirement village that does not allow a TH6 at 20 metres, to being unable to keep the HF beam at 20 metres serviceable. There are many more reasons, but the end result is that some amateurs in retirement have to give up their HF operation. All that is left is a two metre handheld or base rig and a modest antenna. Gone are the days of the 80 and 40 metre rag-chew nets keeping in touch with past amateur friends all round the country, and/or the odd bit of 20 metre DXing.

The silly thing is that we have a technological hobby which, by its nature, is designed to overcome, by technology, problems like this. The amateur limited to two metres or 70 centimetres FM could be "gatewayed" onto any HF band, via a station set up just for that purpose.

Degrees

It is important to point out the intention is not to provide everything that a good amateur HF installation can provide. Having access to all HF bands on any frequency, along with all the bells and whistles that such a station provides, would be difficult and, for this idea, not required. The point is that limited access to HF is far better than none.

There could be several degrees of access. The easiest access would be a single HF SSB frequency gatewayed onto two metres. I can hear the suggestion of problems but let me run this past you.

Simple

This is the simple single-frequency gateway on, let's say, 40 metres SSB. The biggest problem is how to re-transmit the 40 metre SSB onto two metres. How would the system know how to transmit a signal from 40 metres onto two metres without keying up on all sorts of spurious signals? No matter how good SSB mutes might be they are not good enough. The solution is simple; transmit the 40 metre single SSB frequency all the time on two metres, even when there is just 40 metre noise. The 2 metre transmitter is on transmit all the time with the audio from a single SSB frequency on 40 metres connected to it.

The user listens on two metres and hears a single 40 metre SSB frequency. So how does the amateur on two metres FM talk back if the gateway transmitter on two metres is on transmit all the time? Simple! The gateway two metre system is a normal voice repeater in which the receiver and transmitter work at the same time. Even though the gateway two metre transmitter is on constant transmit with the audio from the 40 metre frequency, the two metre voice repeater's receiver is waiting for a signal. This signal is the amateur calling in on two metres. The mute on the two metre repeater detects the incoming two metre signal and this mute logic signal turns the 40

metre SSB transmitter on, along with the amateur's audio from two metres. In operation, the incoming two metre signal has to be CTCSS encoded by the user, as only amateurs licensed for operation on a particular HF band could access the gateway. The amateur can now hear a single 40 metre SSB frequency just as if he was sitting in front of a 40 metre SSB transceiver, and called on that 40 metre SSB frequency.

Even when the amateur is calling in on two metres and, as a result, keying up the 40 metres SSB transmitter, the two metre gateway output remains on transmit. As the 40 metre transmitter is now in transmit, there is no 40 metre band signal, rather the amateur on two metres calling in is heard on the gateway's two metre output. Amateurs listening to all this on two metres hear both sides of the conversation, one from the 40 metre frequency and the other from the amateur using the two metre input. Also note, any amateurs on 40 metres listening to a QSO don't know one of the signals is being gatewayed from two metres unless told.

I may have laboured the description here a little, but I have done this so that the simple system is understood. To summarise, a normal two metre repeater is modified to be on constant transmit, with the audio coming from a single 40 metre SSB frequency and the repeater's two metre mute connected to key up the 40 metre SSB transmitter. The amateur on two metres can now hold a simple QSO with another amateur on 40 metres SSB. All this might sound complicated but it is my limitation with the English language that is the complication. In operation, the system would work with little knowledge required by the user.

Frequency Tuning

In this simple but practical example there are no requirements for the amateur on two metres to have any extra equipment, or modify his equipment. A two metre (or 70 centimetre) FM radio is all that is required. The normal 600 kHz offset is used and the amateur now has access to a single 40 metre SSB frequency.

Now, SSB by its nature is very frequency dependent. Being slightly off frequency results in high or low pitched audio. The amateur using the gateway via two metres has no control over this. He could have, by various means but, initially to keep the system simple, he does not. A designated SSB frequency is chosen and the 40 metre transceiver is aligned so there is no frequency difference between the receive frequency and transmit frequency. Any amateur on 40 metres who appears off frequency, due to a difference between his receive and transmit frequency, would be asked to change his transmit frequency so that the audio via the gateway is correct. This is not hard and is done now when amateurs have transceivers that have a discrepancy between receive and transmit.

What if the chosen frequency is close to another frequency already in use at the time? You have to wait until the frequency close by becomes clear. In this simple set up there are limitations, but it is the basis for more advanced systems.

Complex

The gateway system described so far would offer a usable fun set-up that amateurs could use. Amateurs who had no access, now have limited access. Amateur bands that have less activity than 20 metres are best suited for the simple system. Remember, this gateway idea is not trying to do everything a HF station can do, just some of what it can do.

A complex gateway could offer a number of HF channels on the one band via the DTMF of the user's two metre radio. Even continuous frequency tuning would not be too difficult by using DTMF control. Changing from band to band would also be possible, and turning a HF beam, could all be built in. These ideas come later. What is needed now is a simple gateway set up to demonstrate the operation. By the time you read this, such a gateway set-up will have been tried. The system will be automatic but manned. It really is simple to set up such a system to an existing repeater.

Dedicated

If these gateways became popular, then dedicated repeaters would be built to provide for this activity. Existing repeaters serve a purpose as they are now and should be left as is. The HF gateway, even though it is using existing repeater technology, is different in operation.

Clubs

What a great club project with lots of interesting technical ideas to try out. Start simple and provide a gateway, and then build on sophistication. The equipment requirements are not that great. Perhaps amateurs looking at retirement aspects with no HF operation would donate some of their HF equipment for just such a gateway.

Licensing

This has to be mentioned as it is the most difficult problem of all. As this system is an automatic stand-alone system, it requires a licence, just like the 29 MHz gateway licence. Whether this proves difficult or not is as yet unknown. The best way is to put an application in via the WIA to the ACA and see the result. Based on past delays with the 29 MHz gateway, the most important situation to sort out is that the WIA band plan does not cater for gateways onto any HF band other than 29 MHz. Let's hope we can find a way to try this idea out before I'm in a retirement home!

*21 Waterloo Crescent, Lesmurdie 6076
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Spotlight on SWLing

Robin L Harwood VK7RH*

It was with some sadness we learnt on Saturday, 20 September, that Arthur T Cushen of Invercargill, NZ passed away after a prolonged battle with bone cancer. Arthur was a respected short-wave listener and DXer, for many decades regularly contributing a short-wave column in *Electronics Australia*. His voice was also regularly heard over Radio New Zealand and Radio Netherlands, as well as on other international broadcasters, giving listening tips. He was also an official monitor for the BBC, Radio Vatican and the VOA.

It was Arthur's column that motivated me and, I suspect, many others to listen on short-wave. Arthur's eyesight gradually deteriorated until he became totally blind. However, with the support of his wife, Ralda, Arthur kept up his prodigious work right up to the final few days of his life. It was one of the broadcasters, I think it was Kim Elliot of the VOA, who said that Arthur was "the dean of DXers". Many fine on-air tributes were given over short-wave, including the VOA, Radio Netherlands and HCJB.

My contact with Arthur commenced in 1980 when I became the national co-ordinator of the Handicap Aid Program. Arthur was the New Zealand co-ordinator and we kept in regular communication. I was in awe of him and his accomplishments, despite his visual disability. One of my treasured possessions is a personally autographed copy of his book "World in My Ears". Vale Arthur.

The world-wide OMEGA navigation system on VLF was permanently closed as from 0300z on Tuesday, 30 September. As you may be aware, there is a huge mast located in Gippsland, Victoria that was part of this global chain. GPS satellites have superseded OMEGA, although a Russian variant of OMEGA, commonly known as ALPHA, is continuing on VLF and HF.

I noted, in last month's *Amateur Radio*, the recent death of Peter Alexander VK2PA at Port Macquarie. When I commenced on amateur radio, Peter was one of my first CW contacts. He encouraged me to persevere, as I had almost given it away, when Col VK2ASF and he just left everybody for dead. Remember their nightly QSO on 3575 kHz, which invariably ended at 45+ wpm.

I recently received the following schedule from Alaska's only short-wave broadcaster, KNLS, which is located at Anchor Point. The station is religious but others use it when KNLS programming concludes.

KNLS HF Transmission Schedule, 26 October 1997 to 28 March 28, 1998:

0800 – 6150 kHz – English
0900 – 6150 kHz – Russian
1000 – 7365 kHz – Mandarin
1100 – 6150 kHz – Russian
1200 – 7365 kHz – Mandarin
1300 – 7365 kHz – English
1400 – 7355 kHz – Mandarin
1500 – 7355 kHz – Mandarin
1600 – 7355 kHz – Mandarin
1700 – 7355 kHz – Russian

The English release on 6150 kHz is coming in well here but the higher channels on 25 and 31 metres were better. The 1300 release is identical and is easier to hear. QSLs are welcome but they will only confirm their own programming. Programs by others using their transmitters do not qualify, ie "Radio Free Asia".

Your report may be mailed, faxed, sent by audio recording or by e-mail. All QSLs will be returned by surface mail. To qualify, the report must include the date and time (UTC only) of the transmission, the approximate frequency, and as many program details as you can supply.

KNLS will provide only ONE QSL for each report, regardless of the number of entries. Their addresses are: Mail – PO Box 473 Anchor Point, Alaska 99556, USA; e-mail – *KNLS@aol.co*; fax – 615 371 8791; URL – *http://www.knls.org*

Yet another international broadcaster is fighting for its survival. Radio Prague has broadcast an announcement that protests should be directed to the Ministry of Foreign Affairs in order to continue funding. Also, private operators may take it over, but without short-wave.

Radio Budapest in Hungary has reduced its output due to budgetary constraints. They are scheduled to broadcast to Australia at 0900-1000 on 15210, 17860 and 21560 kHz. On Sundays, an extra hour is heard from 1000-1100. Programming is in Hungarian at this time.

The "Voice of Free China" in Taipei will be known as "CBS-Taipei Radio International" following re-organisation of Taiwan's external broadcasters. This will take place as from 1 January 1998. Currently it broadcasts in English to Australia on 9610 kHz from 1200 till 1300.

The BBC World Service is to broadcast a serial called "Westway" in English. Two 15-minute episodes will be aired each week as from this month. The program centres on a community health unit in Notting Hill in West London, a multi-cultural microcosm of London's metropolis.

Well, that is all for this month. Thanks to Bob Padula and the EDXP and KNLS for assistance with this month's column.

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Update

Intermodulation Performance and Measurement of Intermodulation Components

(published on pages 6-12 of August 1997 issue of Amateur Radio)

The eagle eye of Mark Dods VK3ZR has detected errors in the two last paragraphs in column three on page 10 of the above article. Each of the instances of "mV" should read "µV". These inadvertent errors came about in the translation from the IBM platform used by *Amateur Radio* to the Macintosh platform used by the printer. It seems that all ASCII characters above 127 (the "µ" symbol is ASCII character 230) do not convert accurately. The corrected text is reproduced below:

Our references have so far been made to levels in dBm, or decibels referred to one milliwatt. However, signal generator outputs are commonly calibrated in microvolts and millivolts with scales in multiples of 10. To convert between units, 1 µV across 50 ohms is -107 dBm. Each time the voltage is multiplied by 10, add 20 dB so that 10 µv is -87 dBm, 100 µV is -67 dBm, etc.

To find the signal threshold, set one signal generator to a fairly low level (say 10 µV or -87 dBm) and tune the receiver to the signal generator frequency. Adjust the attenuator so that the signal raises the audio output signal just 3 dB (1.4 times volts) above the noise level (measured with signal off). The signal threshold in dBm is equal to -87 dBm, minus the loss in dB set by the attenuator, minus 6 dB loss in the hybrid combiner.

It would be a good idea to correct your copy of the August 1997 issue of *Amateur Radio* now.

Simple Peak-Reading Watt-Meter

(published on pages 13-14 of August 1997 issue of Amateur Radio)

The author of this article, Jon Lindstad VK2WF, has requested we publish this addendum:

"I have had an enquiry from an amateur in VK5 who has experienced a problem which could be common. He inserted a coax T-piece in the transmission line from his Tx to a dummy load and connected the watt-meter to the T-piece through another length of coaxial cable. He observed different readings on the watt-meter as he changed to other ham bands. The reason for this is probably that the length of coax from the T-piece to the watt-meter acts as an open stub, causing mismatch on the transmission line.

"To avoid this problem, the length of coax from the T-piece to the watt-meter must be very short compared to the wavelength in question. Better still, let the signal pass through the watt-meter box (2 x PL-259) and connect the diodes directly to the inner conductor as I did in the original, but unfortunately did not emphasise in the article. My apologies."

It would be a good idea to notate the article in your copy of the August 1997 issue of *Amateur Radio* now with a reference to this addendum.

Random Radiators

(published on page 15 of September 1997 issue of Amateur Radio)

Lloyd Butler VK5BR has pointed out an error in the quote of his letter in the September 1997 *Random Radiators* column. The word "impedance" was inadvertently substituted for "resistance" near the top of column two. The third and fourth lines of text at the top of column two on page 15 should read "*impedance of shunt reactance and shunt* ***resistance****. When there is no series*".

It would be a good idea to correct your copy of the September 1997 issue of *Amateur Radio* now.

Parallel Resistance

(Formula and Chart)

(published on page 11 of October 1997 issue of Amateur Radio)

The second equation in column one on page 11 is incorrect. Instead of R1=(R2xRp)/(R1-Rp) it should read) R1=(R2xRp)/(R2-Rp).

It would be a good idea to correct your copy of the October 1997 issue of *Amateur Radio* now.

We should also point out that the table for parallel resistors is equally usable for parallel inductors and series capacitors.

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VHF/UHF – An Expanding World

*Eric Jamieson VK5LP**

All times are UTC.

Five/Six Metres in Australia

In these columns, during the past three months, I have ensured that a written description is permanently recorded regarding operations on 50 MHz as they evolved following the end of World War II, during 1946/47, culminating in a world record contact between VK5KL and W7ACS/KH6 on 26 August 1947 (see August 1997 issue).

I had intended continuing from that point in further describing the VK scene as it unfolded, but since I had some information regarding pre-war operating on 56 MHz, a start will be made from there, with the other following later.

Jeff Farmer VK8GF in Alice Springs, sent me the following regarding the amateur activities of his father **Max VK5GF**, prepared from his father's log books of the time.

Maxwell George Farmer 1918-1991 VK5GF was first licensed on 22/1/1934. Until 30/5/1935 his operating was confined to 3.5 and 7 MHz CW and phone. Then 14 MHz took priority until March 1936 when he began using 56 MHz (five metres), in many cases operating from portable locations around Adelaide, also from Mount Lofty and Mount Barker. At the time, his rig ran 3.7 watts to a four element beam antenna. He carried out various antenna experiments and one of his favourite antennas was two half-waves in phase.

One successful five metre expedition was on 6/9/1936 when, from the top of Mount Lofty, he worked Clarry VK5KL situated on The Hummocks (with VK5HT and VK5FM), over a distance of about 75 miles, for a VK5 distance record. Using a four element beam, signals were S9 despite only 3.7 watts input.

Contacts were limited to VK5 stations, and these included VKs 5AC, 5BB, 5BD, 5BO, 5BY, 5RX, 5ES, 5FJ, 5GL, 5GM, 5HD, 5KL, 5LJ, 5ML, 5NC, 5NF, 5OB, 5OZ, 5WI, 5WX, 5YF, 5ZC, 5ZU, 5ZX and 5ZY. Most of his operating time was spent on 56 MHz, occasionally working cross-band to 7 or 14 MHz.

On 26 and 27 June 1937, Max operated portable from Rapid Bay, using 7 MHz to liaise with Adelaide stations for a 56 MHz contact, but for reasons unknown, no contact eventuated.

Not to be outdone, in December 1937 he joined forces with Ron Anderson VK5GM with a portable expedition to the summit of Mount Barker, 1680 feet ASL, to attempt a five metre contact with Frank Miller VK5BF of Murray Bridge, who journeyed to a point near Meningie, about 60 miles from Mount Barker. Forty metres was used for liaison.

A reproduction of the photo from the February 1938 issue of Australasian Radio World, showing VK5GF (left) and VK5GM portable on Mount Barker (see text).

Courtesy Jeff VK8GF, a page from the magazine *Australasian Radio World* for February 1938 gives a description of that portable operation, and one must admire the effort those two made to complete the expedition, lumping heavy batteries to the summit. A few extracts from that page are worthy of inclusion here.

The portable callsign was VK5GY. The five metre rig used a 6A6 as a TNT, modulated by a 42 with an input of 2.5 watts on phone (AM) and 5 watts CW. The receiver was a five-valve resistance-coupled superhet and the antenna two half-waves in phase with twisted pair feeders, mounted on a 30 foot pole which could be broken into six foot sections for carriage.

The 40 metre rig, a two stage affair of three watts input, was built inside a gramophone case along with a two valve receiver. The antenna was a half-wave Hertz hooked straight on to the tank circuit! Power for all filaments came from 6 volt accumulators. Batteries supplied high tension for the receivers, while a genemotor powered the transmitters (see photo).

VK5BF used a pair of 45 valves in push-pull, with 300 volts supplied by a bank of wet "B" batteries.

At about 4.15 pm local, VK5GY contacted VK5BF on five metres for 45 minutes with signals both ways at S8. They could stay no longer as storm clouds were gathering. It took two trips to carry all the gear to the bottom, and they just made it before the heavens opened!

Following that trip, the next entry was on 10/2/1938 when Max worked VKs 5GB, 5LW, 5RS, 5TR, 5WK and 5ZU all at 5x9 phone.

Work commitments took over around this time and amateur activity decreased through the remainder of 1938, with a few local 56 MHz contacts to various stations. Max's last QSO prior to close down for World War II was on 14 MHz on 10/8/1939.

His next log entry: *Amateur radio station VK5GF resumes activities after an absence of seven years and one month on 11/9/1946 by working VK5GB on 50 MHz at 2000 hours local. Other contacts were to VKs 5BQ, 5CK, 5CR and 5MD.* On 29/9/1946 it was noted that the band was still being called five metres. 12/10/46: VK5BQ, VK5GB and VK5RT.

[On 15/11/46 Max made his first contact on the new band of 170 MHz with Reg VK5QR, followed by VK5KZ. Through the remainder of November and to 7/12/46 activity was limited to 170 MHz stations, which included VKs 5KZ, 5QR, 5RO, 5RQ and 5RT.]

Then it was back to 50 MHz again with mobile and portable activity having priority. On 26/12/46 at 1700 local, Max heard VK2WJ calling CQ DX but was unable to make the QSO. Again, the 3.7 watts did not have the punch required. Also heard, but didn't work, VK2AZ.

Max took up sailing and his 50 MHz rig on the 25 foot craft was 1.5 watts input to a doublet antenna 20 feet above the water.

Contacts through December/January 1947 include the usual VK5s, then on 8/1/47 he worked VK4HR. VK5 stations were now working more consistently into VK2 and VK4. Then a brief but abrupt change to try the new 166 MHz band, with many of the workings centred on mobile operation.

Max then turned to 28 MHz with brief periods on 50 and 166 MHz, but he did construct high power equipment for 28 and 50 MHz, so that in December 1947 he worked VKs 2ADT, 2AHD, 2AHF, 2NO, 2OC, 2WJ, 2ZH, 3AKM, 3HZ, 3IV, 3RR, 4AW, 7AB, 7CW and 7XL. But the VK6s still eluded him. On 21/12/47 at 1700 local he worked ZL2MF followed by ZL3LB on 23/12.

1948 was also a good year to VK2 and VK4, not only during the summer but also in June, showing his first entry into winter Es. On 11 June he made the first of many 144 MHz contacts, so by now he was firmly entrenched on the VHF bands.

In summary, VK5GF made his first QSO on 56 MHz on 22/3/36 at 1130 local time with VK5WX; 50 MHz 12/9/46 to VK5GB at 2000; 170 MHz 15/11/46 to VK5QR at 2015; first 50 MHz outside VK5 8/1/47 to VK4HR 1815; first 50 MHz outside VK 21/12/47 to ZL2MF 1700; first 144 MHz on 11/6/48 to VK5JO at 2125.

To be continued.

The Northern Territory Expedition

Part 2 by Alan VK3XPD

Monday, 28 July, David and I departed Adelaide in separate cars at 0830 local and headed for Marla Bore, 140 km south of the NT Border – a distance of more than 1100 km. During our journey we chatted continuously on two metres FM to relieve the monotony. We finally arrived 11 hours later and, after some discussions about who "doesn't" snore, we agreed that a twin-share motel room was appropriate. Following tea and some discussions on suitable vantage points with a couple of "well oiled" local experts, we both retired for the night. It seemed only a matter of seconds after David's head hit the pillow that he began to snore loudly. Unable to get to sleep, I moved out to the car!

Tuesday, 29 July, David in his Commodore, followed a "road worker" east down the Oodnadatta Track some 30 km to a vantage point that could, quote "see for 200 miles". To his dismay, David found this site near Welbourne Hill Station was disappointing and erroneous in its description. After a few map readings the horizon at VK5KK's end was found to be only 20 km in the desired direction, with dirt at least as high as the vantage point. The only redeeming feature of the site was the 30-foot tower, which had, of all things, a solar powered UHF CB repeater on it!

I headed north on the Stuart Highway to Mt Cavenagh, 10 km inside the NT border – a decision again based on the advice from the previous night. Disappointingly, this "mountain" turned out to be a pile of very large rocks about 50 metres above the local surroundings with no suitable access. I returned to a high point alongside the Stuart Highway and established a poor 2 m SSB liaison link with David some 170 km to the south east. The next problem was the road-noise from traffic on the highway. At that time of the morning it was so busy with cars, caravans, trucks, road-trains and tourist coaches that it became impossible to even consider setting up.

I headed across country in the Futura wagon to a "high" vantage point 5 km to the east. From here, on a rocky outcrop about 25 metres higher than my surroundings, 25 watts of two metres SSB into a five element Yagi was still poor with heavy QSB, but signals peaked at times to 53. Since there were no other high vantage points around there was little choice but to try for the QSOs from here.

Our first band was 10 GHz at 1125 local. Signal reports were 51/52 with heavy QSB. Next was 5 GHz with significantly better reports of 53 both ways. Our 3 GHz contact resulted in 51 and 41 reports – again with QSB. The 2.4 GHz contact at 1255 local was the most difficult to complete. Signal reports were 41 both ways. David actually climbed the UHF CB repeater tower and completed the 2.4 GHz contact with dish and transverter held in one hand, while holding on to the tower with one leg locked around a tower leg, and the microphone in the other hand. The overall lack of system gain (dish gain) as the frequency decreases and yet still using the same sized dish and similar RF output power as that used on the higher frequencies, contributed to these poor results.

Next band was 1.3 GHz. Again, due to a lack of antenna gain at my end, no signals were heard at either end. The final band tried was 70 cm at 1315 local. I had FM capability only but signals both ways were fully quieting with some slow QSB – averaging S3 to S7 but peaking higher at times. David used a 22 element K1FO with a five watt handheld! The 24 GHz band was not attempted simply because the distance was excessive for the wide-band FM gear we had – so we both packed up and moved closer together in order to complete the remaining 1.3 GHz and 24 GHz QSOs.

As daylight was quickly failing and we had a long drive back to our scheduled overnight stop at Cadney Park Roadhouse in SA, I set up 1.3 GHz at the Marryat Creek Fibre Optic Repeater station, 33 km inside SA and completed a 41 km FM contact to David who had set himself up on a "rise" about 8 km inside the NT border. Signal reports without pre-amps were S3 both ways, with some QSB. We then tried 24 GHz over the same distance without success. I moved closer to a distance of about 15 km but still no success. Eventually, I drove to David's site in NT to verify the functionality of our gear and then drove about 5 km back into SA and we completed a successful, albeit short, 5.9 km contact with signals "full quieting".

The lack of success experienced on these earlier attempts was attributable entirely to non line-of-sight paths. It was simply not possible to access a high vantage point that had clear uninterrupted views from inside the NT border over these larger distances to a similar point inside SA.

Having successfully established seven new distance records in VK8, we headed for Cadney Park Roadhouse some 240 km to the south, arriving at 2000 local. Next morning, after a hearty breakfast, we continued on to Port Augusta about 700 km south, but not before we checked out the impressive 6 m mesh dish (amongst eight other dishes ranging from two to four metres) set up as part of a business enterprise that sold TVRO systems from this site. Later, at 1600 local, we arrived at Port Augusta. After a brief "comfort" stop and some food, we went our separate ways – David returning to Adelaide and I continued on towards Broken Hill some 400 km to the east.

To be continued.

The full story of the Microwave Expedition is contained in a beautifully presented 14 page dossier prepared by Russell VK3ZQB, complete with graphical charts in full colour, and other relevant drawings and maps. The text was gathered together largely by Alan VK3XPD from the experiences of those involved in the expeditions. Personally, I am at a loss to know how best to handle it!

The introduction is worthy of inclusion here.

"The surge in activity over the last 2 years on all microwave amateur bands from 2 GHz through to 24 GHz has inspired several amateurs to plan and then execute a 'hit and run' DX expedition across 4 states to either set 'new' or where possible – extend the existing VK Distance records.

"The principle aim of this exercise was to promote even greater interest in these under-utilised bands of spectrum.

"The participants were Alan Devlin – VK3XPD from Melbourne, Russell Lemke – VK3ZQB from Port Fairy, David Minchin – VK5KK from Adelaide, Trevor Niven – VK5NC and Colin Hutchesson – VK5DK, both from Mount Gambier and Les Janes from Chisholm ACT.

"Our collective achievements can be best summarised as follows. Over a three week period from late July to mid August 1997 with little or no assistance from 'weather enhancement' – 12 new VK Distance Records were set and, seven existing VK Distance Records were extended.

"Several of these records were actually 'set or extended' on more than one occasion."

A table in the October issue indicated these new or extended records.

Having also viewed the dossier, comments from two of Australia's well known microwave enthusiasts are relevant at this point.

From **Walter Howse VK6KZ**: *"The story is not the records you broke and established but rather the determination and commitment of a group of dedicated people to get out and have fun and demonstrate what can be done with the microwave bands!*

"The bit which is most outstanding, and has few parallels even in the USA, is the distances you covered and the time which you took to cover some of them – 1100 km in 11 hours (and on our kind of roads – no Interstate Freeways of the US!) and that having covered them, the gear was robust and worked so well.

"The USA Rovers have gear to cover lots of bands in their contests but these are mainly mountain-toppers going to pre-determined spots. What I read from your story is that you had some well researched spots but most of it was instant research and try and see how the path would work.

"I guess I have an empathy for what you have done having gone portable myself!

"Looks like I will have to "defend" my patch on the south coast if you inspire others to copy your enthusiasm! I have already passed on to two locals a copy of your article and Neil Sandford VK6BHT has been posted a copy. When he returns to the East you will have another enthusiast in the Canberra region."

From **Lyle Patison VK2ALU**: *"Hello*

from Wollongong. Sorry that I did not have the chance to eyeball with you during your trip from Sydney to Canberra, but fully understand your need to do it direct.

"My congratulations to you and the rest of the µW DXpedition group for the great effort put into the exercise and also for the report on it – and, of course – the results achieved in such a short space of time.

"If this does not stir some activity on the µW bands down the eastern side of Australia – nothing will!

"I fully concur with the thoughts expressed on great need for much more study and correlation of results achieved over both shorter and especially, longer paths with the met conditions existing at the time, so that we can more accurately predict when appropriate conditions are likely to exist in the planning of future tests on the various microwave bands.

"I would be most interested to see something published on the 'nuts and bolts' of measurement of the variables involved and actual calculations using these variables to come up with 'benchmark' values, etc which can be used by the man in the field.

"I wonder what you guys may have come across in this regard (outside the usual Microwave Handbooks and manuals.)

"This may also allow a number of us around Australia to make a record of values which can be DIRECTLY compared over a period of time."

New Microwave Records

John VK3KWA from FTAC advises of the following new records:

420 – 450 MHz
VK8 VK3XPD/8 VK5KK/8 29/07/97 167.7 km
1240 – 1300 MHz
VK8 VK3XPD/8 VK5KK/8 29/07/97 42.2 km
2300 – 2450 MHz
VK1 VK5NC/1} VK1BUC/2} 14/08/97 97.5 km
VK5DK/1} VK3XPD/2}
VK8 VK3XPD/8 VK5KK/8 29/07/97 167.7 km
3300 – 3600 MHz
VK1 VK5NC/1} VK1BUC/2} 14/08/97 97.5 km
VK5DK/1} VK3XPD/2}
VK8 VK3XPD/8 VK5KK/8 29/07/97 167.7 km
5650 – 5850 MHz
VK1 VK5NC/1} VK1BUC/2} 14/08/97 97.5 km
VK5DK/1} VK3XPD/2}
VK8 VK3XPD/8 VK5KK/8 29/07/97 167.7 km
10.0 – 10.5 GHz
VK8 VK3XPD/8 VK5KK/8 29/07/97 167.7 km
24.0 – 24.25 GHz
VK1 VK5NC/1 } VK3XPD/2 13/08/97 17.4 km
VK5DK/1 }
VK2 VK3XPD/2 VK5NC/1 } 13/08/97 17.4 km
VK5DK/1 }
VK8 VK3XPD/8 VK5KK/8 29/07/97 7.3 km

Success on 3.4561 GHz

A news item from the *Official Bulletin of The West Australian VHF Group:* On Sunday 17/8 at 0700, Al VK6ZAY at Karnet and Terry VK6TRG at Wireless Hill worked 3.4561 GHz for 44 km for their first contact on this frequency. Both had homebrew radios, Terry VK6TRG from modified VK5 kits and Al VK6ZAY with his own design homebrew.

From the UK

Ted Collins G4UPS spent most of August on holidays in a caravan, but took his trusty TS-600, a 25 watt amplifier and a small antenna, managing to keep an eye on the bands.

Contacts were made with stations in 9A, CT, DL, EH, F, GM, HB, I, LA, OH, S5, SM and YU, so I suppose 13 countries would be considered reasonable for a period on holidays.

September was a quieter month, although Ted was somewhat annoyed to take a day off on 7 September and then find that he had missed the Libyan expedition station 5A28! I guess it has happened to all of us at some time!

EME Contact

Dallas Taylor VK5WA advises that, on Sunday 21/9, Dave Blaschke W5UN and Graham Daubney F/G8MBI on 144.028 MHz, achieved the first single-Yagi to single-Yagi EME QSO in history.

W5UN was using an old KLM 17LBX (one of the few which survived from the destruction by tornado of his first array) and F/G8MBI was using one of Mike Stahl's 2M-8WLs. Both stations were running maximum legal power and neither employed ground gain. Success was achieved on the third schedule attempt.

Retraction: A recent note posted to MOON-NET by Mike K6MYC points out that W5UN and F/G8MBI are actually the first to complete a one-Yagi to one-Yagi EME QSO on 144 MHz. The same feat had been accomplished earlier on 50 MHz by W7HAH and SM7BAE.

In response to a query received, W5UN and F/G8MBI made their QSO on CW. No DSP was used other than narrow-band filtering. ... Ray Soifer.

TEP Openings Around the World

There has been much stirring of TEP activity in various parts of the world, with the following being reported during September. Reports from VK3OT and *Internet Six News*. Are these the first rumblings of future F2 activity? And who said that six metres was dead? Look to the north between 0300 and 0700, especially around 48.240, 48.250 and 49.750 MHz. The signals are not strong in the lower regions of VK but they can be heard quite frequently.

1/9 1150 JA5CMO VK8VF/b 50.057 Evening TEP
2/9 1210 JA5CMO VK8VF/b 50.057 Evening TEP
11/9 1232 JH4JPO VK8VF/b 50.056 529
12/9 1854 4Z5JA 7Q7RM 50.110 TEP
12/9 0050 TI4JHQ worked four LUs by TEP
12/9 KG6UH worked three LUs – signals to S9+
13/9 1745 4X to 7Q7 5x7 TEP
14/9 0400 V73AT NH7R 50.110 Hawaii
14/9 0400 V73AT KH6/K6GSS 50.110 Hawaii
14/9 0800 V73AT 49.750, 48.260 video
16/9 1733 G0CGL 7Q7RM 50.110 First EU/7Q7 for year
19/9 2300 WP4O 16 stations in LU, CX, PY 5x9 TEP
19/9 1615 IK0BAL and GJ4ICD report V51VHF/b 559
21/9 1150 JH6VXP VK8VF/b 50.056 519
21/9 1200 VK8RH to JA6 5x9, 48.240, 48.250, 49.750 all 5x9
21/9 1201 JH4JPO VK8RH 50.110 529
21/9 1217 JH6VXP VK8MS 50.130 5x3
21/9 1225 JA6QGG VK8MS 50.140 5x2
22/9 1730 V51VHF/b to Italy 599
23/9 1142 JH4JPO VK8VF/b 50.056 TEP 519
23/9 1815 7Q7RM 9H5EE 5x9
24/9 0700 YJ8UU KH6HME/b KH6HI/b (info via VK4AFL)
25/9 1240 VK8MS VR2XMT 50.140 First VK-VR2 for 1997
25/9 1315 VK8RH to JA6 5x9, TV video 5x9
26/9 0730 JA2IGY/b 539, heard by VK3OT, VK3ALM, VK5LP
28/9 0600 46.172 video, then strong 49.750 video to VK3OT
26/9 0830 VK3OT UAO-TV 49.750 First TV TEP for 1997
26/9 1140 JH4JPO VK8VF/b 50.056 559 TEP
26/9 1207 JH6VXP VK8MS 50.110
26/9 1220 JH6VXP VK8RH 50.110
28/9 2355 LU2EGQ heard XE1NVX 5x8
29/9 0003 LU2EGQ YV4YC, 0015 WP4O, 0020 WP4LUU by TEP
29/9 0700 open JA1,2,6 with all beacons copied in Darwin
29/9 0800 VK8RH heard 48.2396, 48.249, 49.750 video
25/9 YD9MEV on 145.090 5x4 FM reported by Rex VK8RH

Beacon Status for SE NSW

Ron Cook VK3AFW passed a message from **Rod Collman** that the following beacons are operational from Mount Emerald near Nimmitabel in south eastern NSW: VK2RBC on 144.410 and 432.410. The 1296.410 beacon is off-air pending repairs. The beacons run 10 watts FSK to an omni-directional horizontal antenna and are 1400 metres ASL.

Closure

I regret that two important articles have taken most of the available space this month. A decision had to be made which way to go, so I decided to "clear the decks", so to speak, and return to more general news next month, by which time there may be some sporadic E contacts to report.

Closing with two thoughts for the month:

1. Whoever wants to be a judge of human nature should study people's excuses, and

2. The true test of humility is whether you can say grace before eating crow.

73 from The Voice by the Lake.

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Ionospheric Update

*Evan Jarman VK3ANI**

Solar Activity

Solar activity started the quarter at low to very low levels. Activity was moderate on 29 August with a class M1.4 flare at 2332 UTC. There were a number of class C flares from the same region, considered to be the most significant region of the new solar cycle to date. Sunspot activity has markedly increased during the last quarter. Indications are that we are about to start the rapid climb phase of the new solar cycle.

The eleven year solar cycle graph is now using the more common smoothed sunspot number: smoothed over a year rather than a month. This gives the smoothed sunspot number curve its classical shape, showing the underlying trend. The T index line is monthly, showing the variation from this trend.

The SEC/NASA solar cycle panel estimation of cycle 23 is that it will peak with a smoothed sunspot number of 165 in March 2000.

Ionospheric Activity

There was a short-wave fadeout from 2335 to 2357 UTC on 29 August associated with the class M1.4 flare. Some spread F was also observed during the local night time during July in the southern regions of Australia.

There were also short periods of depressed activity during daylight hours in northern Australia. MUFs were down by about 15-20%. These were mainly observed around Darwin. The Ionospheric Prediction Service issued nearly a dozen HF radio communications warnings during the quarter relating to this depressed activity.

Geomagnetic Activity

The increase in geomagnetic activity on 31 July is believed to be related to a coronal hole. While the Learmonth A index was 11, the planetary A index was 19. The planetary A index is actually an average of the observations taken around the world. The activity in the northern hemisphere was responsible for the higher average.

Activity increased to unsettled to active during 3, 13-14 and 28 August. The first being associated to the 30 July coronal mass ejection and the last two believed to be related to coronal holes.

A coronal mass ejection on 27 September is likely to be the cause of geomagnetic storm activity around 7 October.

T index

The Ionospheric Prediction Service revised the T index table during the last quarter. Values are now quoted up to the year 2006. These changes are reflected in the solar cycle graph. The revised data is displayed as T (new) and previously published values (*Amateur Radio* August 1997 page 51) are labelled T (last). Only values to 2003 are shown as the graph is meant to cover one solar cycle, normally eleven years.

The Ionosphere Online

The Ionospheric Prediction Service now provides an online map of the ionosphere, accessible through their world wide web site. The map is for the Australian region and includes local HF predictions (Hourly Area Prediction charts), detail on current communications warnings and details| on HF fadeouts. The address is: *http://www.ips.gov.au/asfc/aus_fc/* The telephone number for the recorded message, which gives both ionospheric indices and conditions has changed; the number is now 02 9213 8012.

**C/o PO Box 2175, Caulfield Junction VIC 3161*

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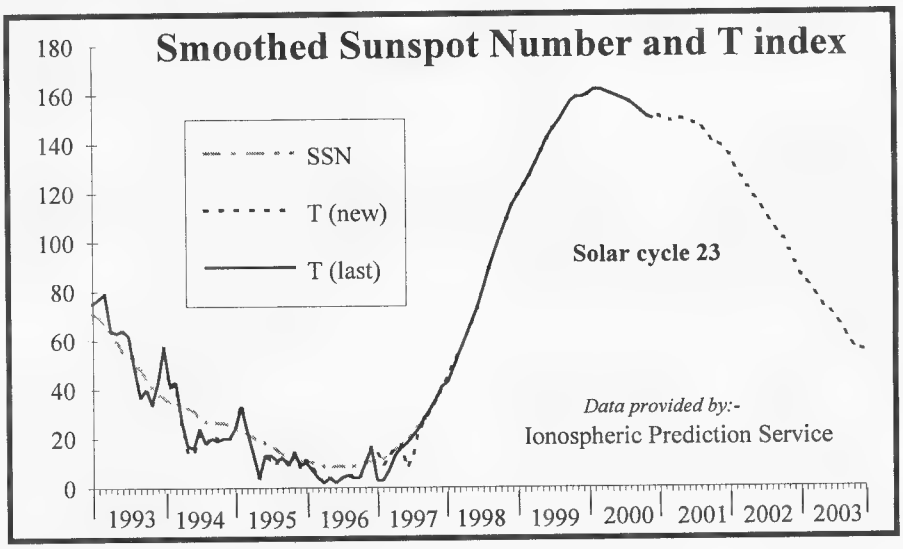
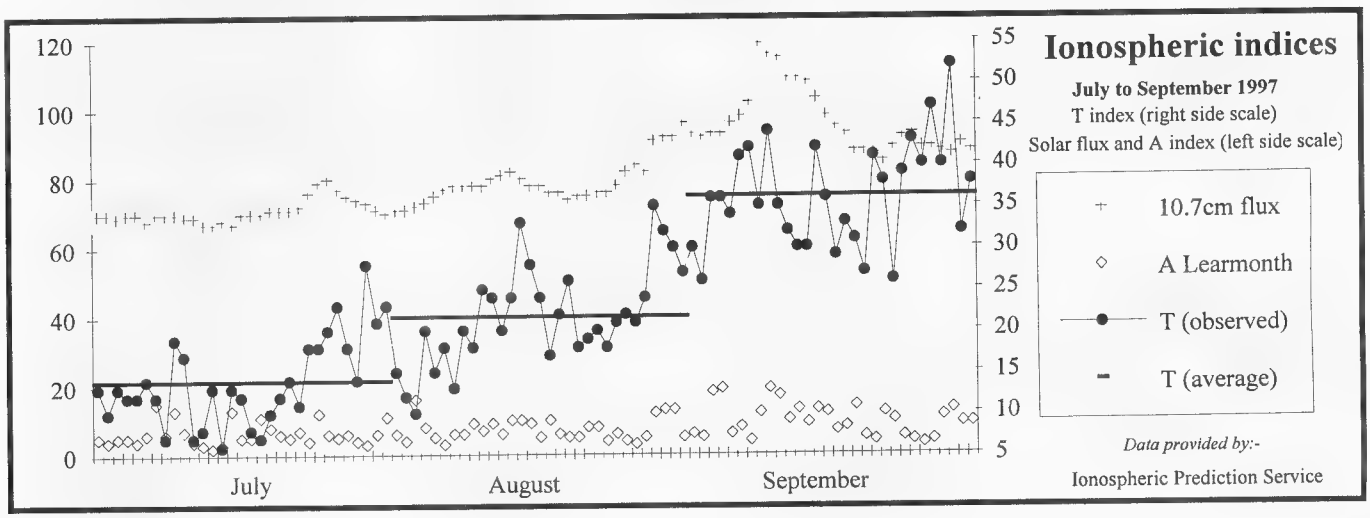




HF Predictions

Evan Jarman VK3ANI

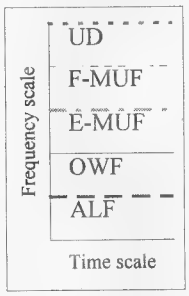
These graphs show the predicted diurnal variation of key frequencies for the nominated circuits. This also indicates a possibility of communication (percentage).

The frequencies, identified in the legend, are:-

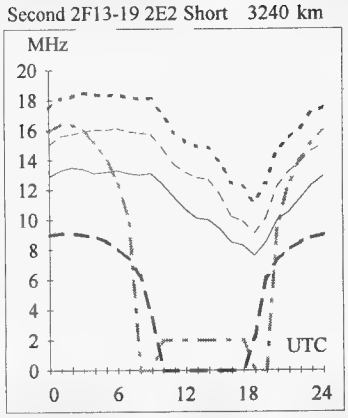
Upper Decile (F-layer, 10%)
F-layer Maximum Useable Frequency (50%)
E-layer Maximum Useable Frequency
Optimum Working Frequency (F-layer, 90%)
Absorption Limiting Frequency

The predictions were made with the Ionospheric Prediction Service program, ASAPS V3.2. The T index used is shown above the legend. The Australian terminal azimuth, path and propagation mode are also given for each circuit. **ar**

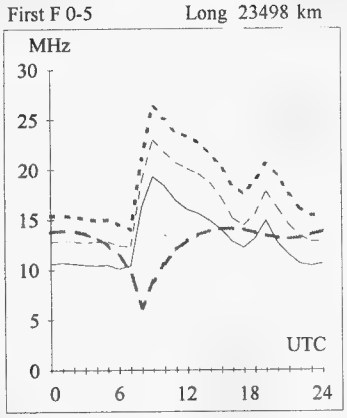
T Index: 35



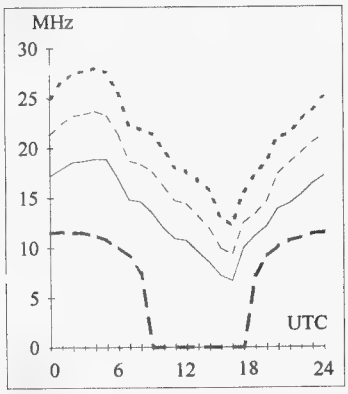
Adelaide-Auckland 104
Second 2F13-19 2E2 Short 3240 km



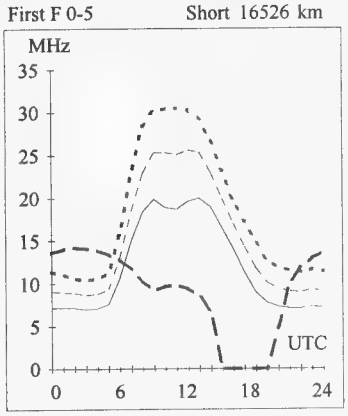
Brisbane-London 147
First F 0-5 Long 23498 km



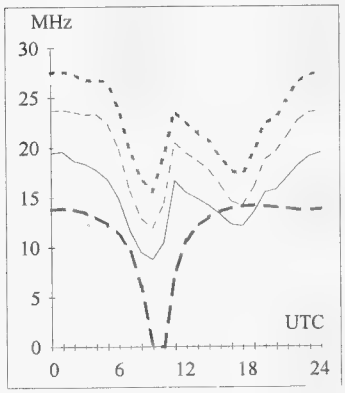
Adelaide-Honolulu 57
Second 4F7-11 4E0 Short 9160 km



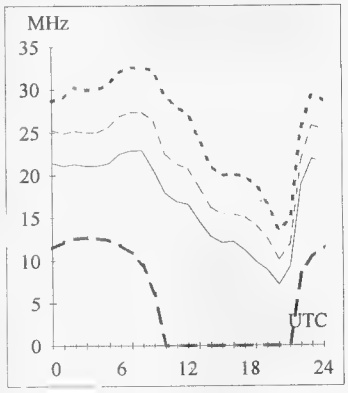
Brisbane-London 327
First F 0-5 Short 16526 km



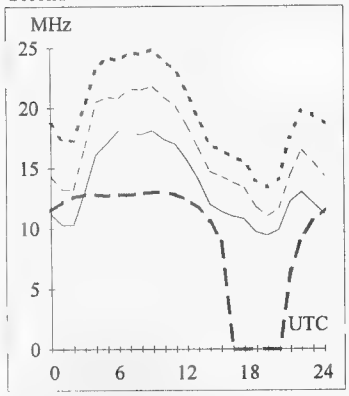
Canberra-Barbados 123
First F 0-5 Short 16232 km



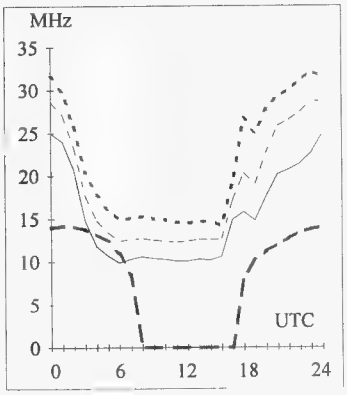
Darwin-Osaka 5
First 2F4-9 2E0 Short 5263 km



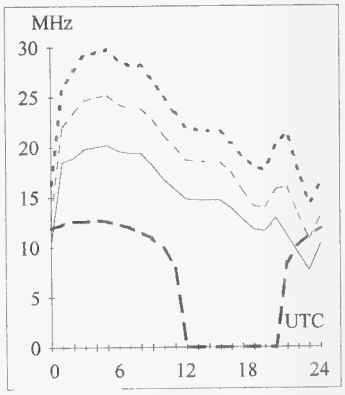
Adelaide-Lusaka 246
Second 4F4-8 4E0 Short 10788 km



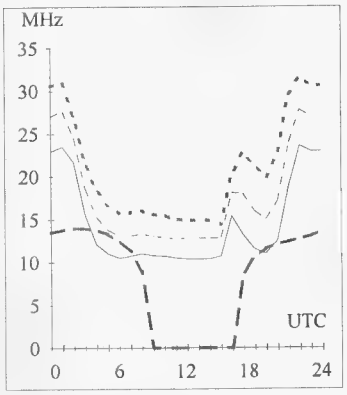
Brisbane-Seattle 44
Second 4F2-5 4E0 Short 11845 km



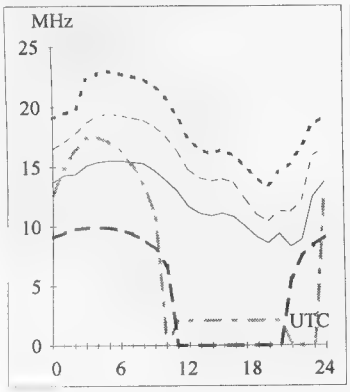
Canberra-New Delhi 303
Second 4F4-9 4E0 Short 10348 km



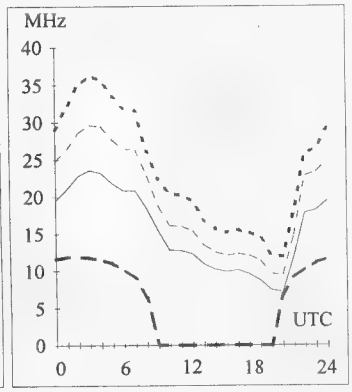
Darwin-San Francisco 54
First F 0-5 Short 12316 km



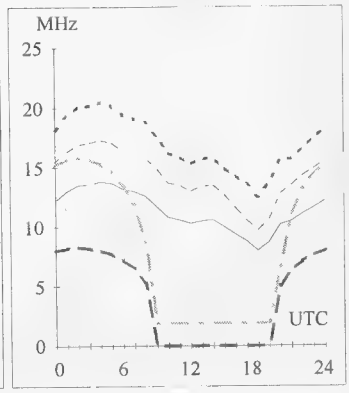
Adelaide-Singapore 311
Second 3F11-18 3E1 Short 5414 km



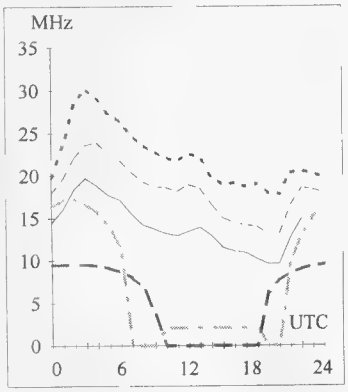
Brisbane-Tokyo 348
Second 3F6-10 3E0 Short 7159 km



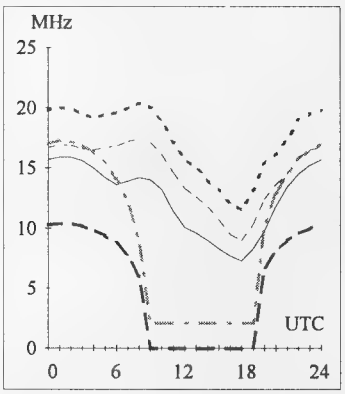
Canberra-PortMoresby 355
Second 2F16-22 2E4 Short 2870 km



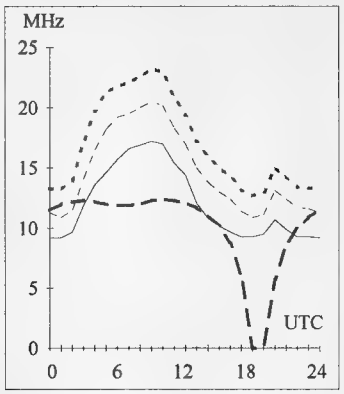
Darwin-Suva 103
Second 3F12-17 3E2 Short 5126 km



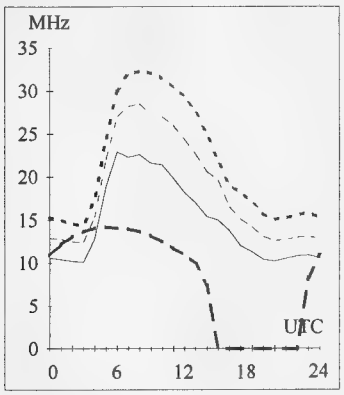
Hobart-Christchurh 101
First 1F9-14 1E0 Short 2040 km



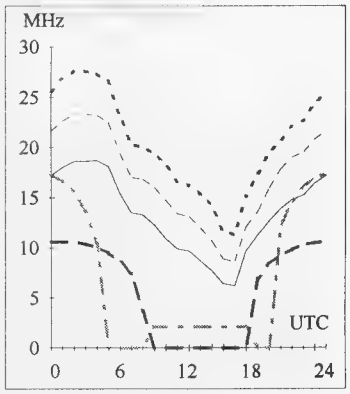
Melbourne-Capetown 222
Second 4F5-10 4E0 Short 10316 km



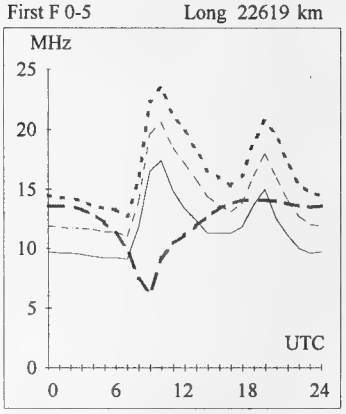
Perth-Budapest 311
First F 0-5 Short 13039 km



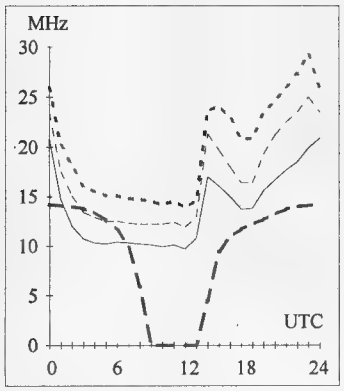
Sydney-Honolulu 49
Second 4F8-14 4E0 Short 8169 km



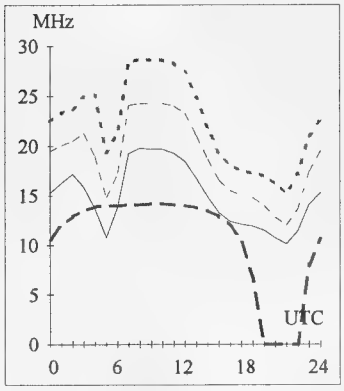
Hobart-London 123
First F 0-5 Long 22619 km



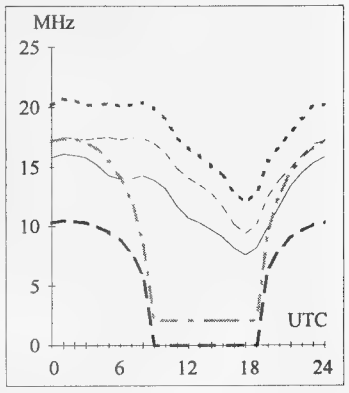
Melbourne-Chicago 67
First F 0-5 Short 15569 km



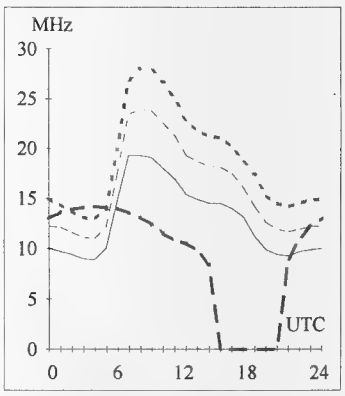
Perth-Dakar 259
First F 0-5 Short 14918 km



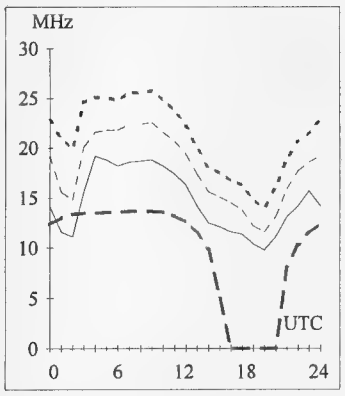
Sydney-Invercargil 139
First 1F9-14 1E0 Short 2017 km



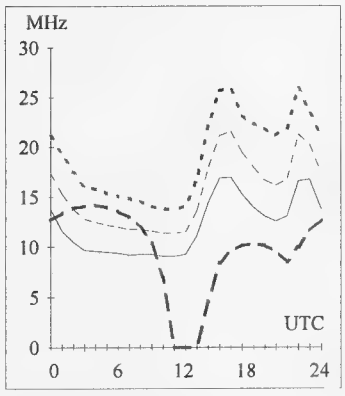
Hobart-London 303
First F 0-5 Short 17404 km



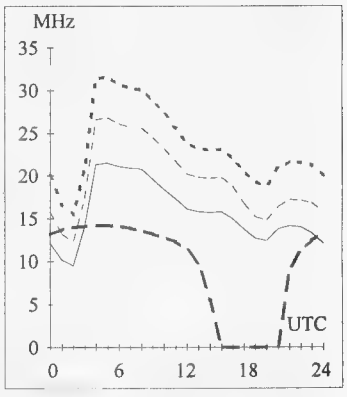
Melbourne-Nairobi 258
Second 4F3-7 4E0 Short 11500 km



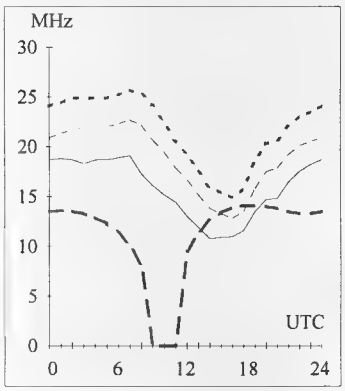
Perth-Ottawa 30
First F 0-5 Short 18212 km



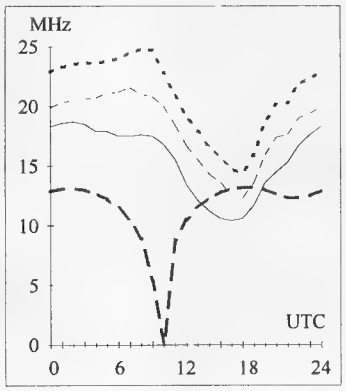
Sydney-Tel Aviv 287
First F 0-5 Short 14173 km



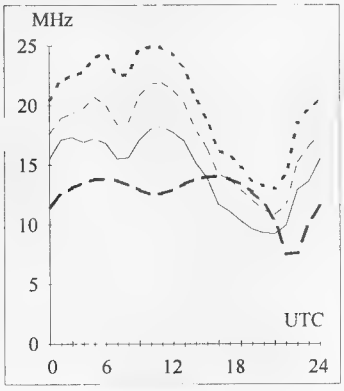
Hobart-Lima 133
First F 0-5 Short 12420 km



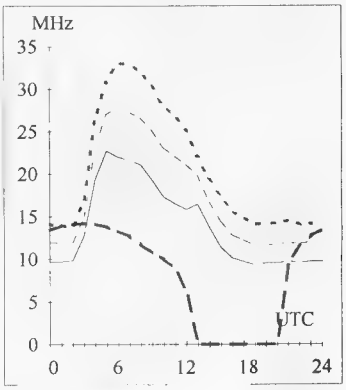
Melbourne-Santiago 150
Second 4F3-7 4E0 Short 11272 km



Perth-Rio de Janiero 203
First F 0-5 Short 13523 km



Sydney-Moscow 317
First F 0-5 Short 14493 km



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• **WEATHER FAX programs** for IBM XT/ATs *** "RADFAXZ" $35.00, is a high resolution short-wave weather fax, Morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. *** "SATFAX" $45.00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. *** "MAXISAT' $75.00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add $3.00 postage. ONLY from M Delahuntly, 42 Villiers St, New Farm QLD 4005. Ph 07 358 2785.

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FOR SALE NSW

• **Cushcraft R-5** antenna, 10-12-15-17-20 metre, complete with manual, as new, $215. **10-11 metre Werner Wolf vertical**, new, never used, $100. **Model 178 SWR/Power, Mod, FS Meter, antenna matcher**, new, never used, $100. K B Carey, VK2CWI, QTHR.

• **18 MHz monoband 3 el Yagi**, excellent cond, Buyer collect, J R Thurstun VK2KV, 02 4787 7003.

• **TH6-DX** tri-band HF beam, $350. **Yaesu FRG-7** HF receiver, $150. **Electrophone TXB-153** hand-held 2 m, $150. **DSE light duty rotator**, $100. **AX-144** 11 m SSB txcvr, $175. **Philips FM-92** 2 m, $150. Tony VK2BTS, QTHR, 02 6642 3641 (AH), 02 6643 0243 (BH).

• **Kenwood TS-520S** txcvr, s/n 610946, excellent condn, complete with frequency counter, operating manuals, new spare set of final tubes, DC lead, mic. $600. Ted VK2BTB, QTHR, 02 9644 4071.

• **Yaesu FT-101Z** txcvr, s/n 9H090635, as new, incl manual, original, maintenance manual, Z match (h/brew). Allan VK2PT, 02 4967 1495.

• **Kenwood TS-43X** HF txcvr, s/n 4111010, with **SP-430** external speaker, $700 the pair. **DSE power supply**, 3-15 V 25 amp, s/n 92515310, $150. The lot $800. Jon VK2JFE, QTHR, 02 9456 5805.

• **Cushcraft tri-band Yagi**, 10-15-20 m, $110. **2 m 12 element beam**, $65. Both antennas in very good condn. Ernest VK2BED, 02 9532 0175.

• Deceased estate. **Kenwood TS-430S** HF txcvr, both manuals, recently serviced, $850. **Kenwood TR-8400** UHF FM mobile with manual, $250. **Drake low pass filter**, 1 kW, $50. Freight extra at cost. John VK2FUR, 02 4625 1812.

• **Icom IC-706** HF/6 m/2 m txcvr, remote cable, face, mounting bracket, never used mobile, mic, manual, leads, s/n 3672, can mail anywhere, $1750. Ossie VK2RB, QTHR (QTH Tweed Heads on VK4 border), 07 5536 5951.

• **HF antenna and tower:** 60 ft (18 m) three-stage wind-up tower, 3 sets of guys, turnbuckles, TH6DXX antenna, Daiwa rotator, dismantled Sydney, $900. E G Popham VK2EZQ, QTHR, 019 460 437 1900 – 2100 AEST.

• **Yaesu FT-209RH** handheld txcvr, 140 – 150 MHz, 5 W output, new battery, case, YH2 headset-mic for hands-free work with VOX, VGC, $290 the lot. Bruno VK2BPO, QTHR, 02 9713 1831.

• **Grundig DTR1100** digital satellite receiver, s/n 20000279, excellent working condn, with remote control and instruction manual, 1½ years old, paid $1400, will sell for $880 ONO. Max VK2AML, 02 9797 0593.

• **Icom IC-2400A**, 144 and 420 MHz, 45 W, $600. **Icom IC-3200A**, 144 and 420 MHz, 25 W, $550. Both as new with manuals. **Kenwood TM-201A**, 144 MHz, 25 W, $250. **MFJ-484** four memory keyer with "track" key, $200. **13.6 V 20 A PSU**, ex computer, $200. A M Dan VK2ABU, QTHR, 02 9314 6055 (BH), 02 9328 1261 (AH).

FOR SALE VIC

• **Yaesu FT-757GX**, auto ATU, plus PSU, $1100. Can be viewed in Melbourne. VK3NI, QTHR, phone Mario 02 6027 3377.

• **Motorola MCX100** 2 m VHF radio, 16 channel, EPROM progr complete with prog, $120 ONO. C D Slager VK3AZE, 03 9309 4462.

• **Chirnside CA-33** tri-band beam, with **CDE Ham II** rotator system, beam disassembled with documentation and ready for transportation, $520 ONO. **Philips 815 (UHF Mk 1)** 50 watt base station transmitter with in-built 10 amp 13.8 volt power supply, $100. **Yaesu FT-4700RH** dual band 2 m/70 cm mobile, in mint condn with box, $840 ONO. **Motorola HT220s** UHF hand-helds, pair, $50. **UHF 6LD 450S Diplexer**, 6 cavity type, $100 ONO. Ian Keenan VK3AYK, QTHR, 03 9585 1123 (AH).

• **Kenwood TL-922** HF linear amp, 160-10 m, 1200 watts output, new Eimac 3500Z tubes fitted recently, $1850. Ray VK3RD, 03 9726 9222.

• **Yaesu FT-707** HF txcvr, $600. **Yaesu FC-707** ATU, $200. **Yaesu FP-707** power supply, $300. All reasonable offers considered. R W Taylor VK3XRT, QTHR, 03 9723 7802, VK3XRT@VK3ECC, *rt@rag.com.au*

• **Motorola MCX100** 2 m 16 ch radio, 30 W output, EPROM programmable, $100. Claus VK3AZE, QTHR, 03 9309 4462.

• **MFJ 9020**, 20 m QRP txcvr, 4/5 watt CW, 13.8 V, $90. James VK3AIQ, 03 5349 2382.

• Novice package, **Icom IC-721** HF txcvr, **AH-3 ATU**, AH-2b element, **IC-2300** dualband, **Alinco DJ-560** dualband hand-held, $1800. Will separate, works well, upgrading shack. F J Messemaker VK3HFM, 03 5360 8284.

• **Icom IC-735** HF txcvr, complete with mic, handbook, mobile mounting bracket, in original box, EC, $950. **Yaesu FT-900** mobile txcvr, as new in box, complete with **FSK900** remote kit, handbook, under warranty, $1500. Rob VK3JE, 02 6027 1077.

• **Ameritron linear amplifier**, 600 W, plus peak reading SWT/Wattmeter that goes with amp. **MFJ-815B linear amplifier**, s/n AL81113539X. Items practically new, reason for sale is they are too heavy for an invalid person to handle, reasonable offer accepted. Antonio Lucani VK3ALA, Lot 2 Stanley Road, Stanley VIC 3747, 03 5728 6624 (any time).

• **FT-101ZD**, $550. **FV-101Z** ext VFO, $120. **FT-101B**, $250. **FT-102, SP-102**, $650. **A3S** 3 el triband, $550. **IC-2SAT**, $220. **AWA F242A** Dist/Analyser, $800. **IC-AT100** ATU, $120. **Leader ATU**, 250 W, $175. **Star ST-700 and SR-700**, Rx/Tx pair, $300. **NJZ-900** analogue phone tester, $2300. **Bird Wattmeter plug-ins**, $100 each. **10 MHz CRO**,

$150. **500 MHz frequency counter**, $150. **AWA RT-80**, $40. Lee VK3GK, 7 Ester Crescent, Clayton VIC 3168.

• **Icom IC-735** HF txcvr, EC, with mic, handbook, service manual, Oskerblock SWR meter, plus other extras, $875. Alan VK3AMT, 03 9789 9106.

• **Plustek 800** single sheet page-reader, HP and Twain compliant, needs Windows 3.1, black and white only, unit is a scanner/copier/fax up to A4, with all software, manuals and cables, excellent condn, $110 ONO. Harold VK3AFQ, QTHR, 03 9596 2414.

• **Yaesu MD-1B8** dynamic mic, perfect condn, up/down control, 8 pin, $200. **TET HB33** mini beam, performs well, owner upgrading, $300. P W B Johnson VK3AJP, QTHR.

FOR SALE QLD

• Estate of Jim Biddle VK4QC. **Yaesu FT-7B**, excellent condn, complete with mic, handbook, DC lead, packed in original carton, $400. **Yaesu FT-757GXII**, bought new 10 March 1992 but due to failing health only used for about a dozen QSOs, complete with mic, DC lead, handbook, packed in original carton, mint condn, $1200. **Heathkit Cantenna** dummy load, 1 kW capacity, with manual, good condn, $75. **Kenwood AT-200** antenna tuner, very good condn, with manual, packed in original carton, $125. **Icom IC-02AT** hand-held 2 m transmitter with **HS-10SA VOX** unit and hands-free headset suitable for mobile operation, all originally supplied accessories and original packing cartons, $200. **Icom IC-255A** 2 m FM txcvr, with handbook, mic, mobile fittings and original packing, $250. Quantity new **300 ohm open wire antenna feed cable** (ladder line not ribbon type), estimate between 30 and 50 metres, $25. Contact Trevor Knight VK4NLX on 076 612 432 (AH) or 076 613 131 (BH) for further details or inspection. Prices quoted are not negotiable as the condition of these items means they are really good value.

• **Kenwood TS-520S**, s/n 830738, includes two spare 6146s, $300. **Matching DG5** digital display, s/n 720321, $100. The lot, $400. Charlie VK4BQ, QTHR, 077 794 301 or 077 788 786.

• **Kenwood TS-680** with **PS-50** PSU, **SP-940**, **MC60** mic, $1000. **ATU-230**, $150. **Icom IC-02A** 2 m hand-held, $250. **Multi band Comantenna**, $100. All in good condn with manuals. Rod VK2BRW, Gold coast, 07 5524 3722.

• **Stepped attenuator**, 22 GHz, 80 dB range in 20 dB steps, SMA connectors, electrically stepped, $30. Gary VK4AR, 07 3353 1695.

• **Kenwood TS-140S**, s/n 21000625, MC-80 mic, IF-10C interface, take away at $1000. Richard VK4DIC, QTHR, 07 3264 1655.

FOR SALE SA

• **Prime Focus 2.76 m dish**, as new, solid spun heavy duty aluminium, with heavy duty, hot dipped polar mount and tripod, all mounted on a heavy duty tandem trailer with stabilisers, ideal for tropospheric work, best offer. Bob VK5UL (ex VK5BJA), QTHR, 08 8362 2251 (BH), 08 8267 5859 (AH).

• **Kenwood TS-600** all mode 6 m txcvr, EC, s/n 710203, including user and workshop manuals, mic, etc, $350 ONO. David VK5AXW, 08 8370 9569 (AH), 08 8370 1066 (BH).

FOR SALE WA

• **Icom IC-505** all mode txcvr, 50-54 MHz, fitted with FM board, recently overhauled by Icom, complete with Dick Smith 100 W linear amp, good condn, $675. **TH3 Jnr** tri-band band beam, good condn, $200. Bruce VK6CX, 08 9310 4740 (AH), 08 9222 3616 (BH). Licensed amateurs only.

FOR SALE TAS

• **Icom IC-736**, auto ATU, 160-6 m, gen coverage receive, boxes, manuals, as new, $2350. **FL-102** Icom AM narrow filter, $65. **Commodore MPS801** printer, new, $90. **Samsung green-screen monitor**, new, $85. **Com-Pakratt RS232 level converter and program cartridge**, suit C64 and C128, interfaces Commodore to PK232. **Kenwood TS-690SAT** 160-6 m, general coverage, $1600. **PS-51** power supply, $275. Allen VK7AN, QTHR, 03 6327 1171 (H), 0417 354 410.

WANTED NSW

• **Circuit for Acer 500/Multitech model MM-211** computer monitor, copying and other costs will be re-imbursed. **Photographic manual, "The Dufaycolor Book"**, to buy or borrow, needed for research into history of colour systems, costs re-imbursed. Philip VK2ZPW, QTHR, 02 9528 8070.

• **1997 International Call Book**. Karl VK2GSN, 02 9773 7594 any time.

• **Morse keys**, especially Australian keys, Auto-Morse, Pendographs and simplex autos, top dollar paid for good condn keys. Steve VK2SPS, 02 9999 2933 after 6 pm.

• **Plug-ins for Bird 43 Thruline** watt-meters, elements 5C, 50C, 1000C, 50D, 1000D, 2.5K and 25K. Guy VK2BBF, QTHR, 02 4751 6726.

• **Drake SSR1 service info**, will pay all costs. R L Murphy VK2ERM, 07 5524 2940.

• **Kenwood TH-28A accessories**, BT-8 battery case, PB-13 battery pack case. Noel VK2TNB, QTHR, 02 9546 3617.

WANTED VIC

• **Power supply boxes for Wireless Sets 11 and 19**, in any condn. Any **front panel for No 11** set, nameplates, knobs. Original **slow motion dial for R1155** receiver. Clem VK3CYD, QTHR, 03 9486 0343, *clem.jarvis@rmit.edu.au*.

• **AR7** communications receiver, in any condn. Howard L30951, 03 9408 7597.

• **Yaesu FL-7000**, with handbook. Noel VK3FGN, 041 734 1464

• **Yaesu FTV-250** VHF transverter. **Yaesu YD-148** desk mic. **Yaesu FC-101** antenna coupler. Bill VK3HX, QTHR, 03 9807 9172, fax 03 9807 9080.

WANTED SA

• **Old valve receiver wreck**, BC342, BC312, AR88, SX28, or other 1940s to 1960s model for education and restoration. Rob VK5RG, QTHR, 08 8379 1889.

• Spare **CRT type T5550-2** for Tektronix type 555 CRO, must be in good working order. C Ratcliff VK5ZST, 08 8520 2988.

• **Yaesu YO-901** monitorscope and/or information re same. Also **valve communications receiver**, Eddystone, Collins, etc. David VK5AXW, 08 8370 9569 (AH), 08 8370 1066 (BH).

• **Yaesu FTDX401** instruction manual (or copy). Maurie VK5ZU, QTHR, 08 8344 3537.

MISCELLANEOUS

• **The WIA QSL Collection** (now Federal) requires **QSLs**. All types welcome, especially rare DX pictorial cards, special issue. Please contact the Hon Curator, Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose VIC 3765, tel 03 9728 5350.

• **Summerland Computer Expo**, Lismore NSW City Hall on Saturday, 22 November, commercial displays, pre-loved gear tables, Internet sessions, lucky door prizes, refreshments, sponsors SARC. Contact John on 02 6621 5217. **ar**

Technical Correspondence

All technical correspondence from members will be considered for publication, but should be less than 300 words.

Beam Gain Formula

Browsing through some old magazines I chanced upon a very interesting theory concerning the gain of a beam antenna.

It was a May 1956 edition of *CQ* and from an amateur named Robert Weinstein W2JAY. He worked for a beam manufacturer and had been searching the literature in vain for some simple method of predicting the gain of any design of beam antenna in advance of its construction.

From observed test results and published data, some hundreds in number, he claims that he discovered a simple formula involving only three factors which satisfied all of the assembled data.

The formula was: That the maximum gain obtainable from a parasitic half-wave beam antenna is given by the expression Gp = E + E (1+S)> where Gp = power gain over reference dipole, E = number of elements in beam, and S = average wavelength spacing between elements.

This formula assumes ideal conditions in that the beam is not of reduced dimensions, spacing is not reduced or increased to reduce gain, and that the beam is adjusted (particularly element spacing and lengths) for maximum gain. Also, that the SWR is intended to be 1:1 and that the antenna is mounted at reasonable effective height and away from obstacles.

He claims that this expression has been confirmed by the published gain charts of leading antenna manufacturers and other articles.

Example 1: What is the power gain of a three element half-wave beam antenna with 0.1 wavelength director spacing and 0.2 wavelength reflector spacing?

From the formula, Gp = 3 + 3(1+0.15)> = 6.45. This power gain is equivalent to a gain of 8.1 dB.

Example 2: What is the power gain of a four element half-wave beam with a 0.1 wavelength spacing for the 1st and 2nd directors and 0.25 wavelength reflector spacing?

Compute average spacing as (0.1 + 0.1 + 0.5)/3 = 0.15. Therefore, Gp = 4 + 4(1.15)> = 8.6 power gain; which is equivalent to a gain of 9.3 dB.

Certainly it does give figures which seem realistic and much more likely to be correct than some of the fancy claims that are made in this area. Seems that they had it all worked out back then and we haven't improved on it since!

Try it out and see if you agree with it.

Reg Carter VK3CAZ
RMB N330 Ballarat VIC 3352
ar

WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually in their residential State or Territory, and each Division looks after amateur radio affairs within its area.

	Division Address	Officers			Weekly News Broadcasts		1997 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601	President Secretary Treasurer	Hugh Blemings John Woolner Les Davey	VK1YYZ VK1ET VK1LD	3.570 MHz LSB, 146.950 MHz FM each Sunday evening commencing at 8.00 pm local time. The broadcast text is available on packet, on Internet aus.radio.amateur.misc newsgroup, and on the VK1 Home Page http://www.vk1.wia.ampr.org	(F) (G) (S) (X)	$72.00 $58.00 $44.00
VK2	NSW Division 109 Wigram St Parramatta NSW (PO Box 1066 Parramatta 2124) Phone 02 9689 2417 Freecall 1800 817 644 Fax 02 9633 1525	President Secretary Treasurer (Office hours Web:http://marconi.mpce.mq.edu.au/wia e-mail address: vk2wi@ozemail.com.au Packet BBS: VK2WI on 144.850 MHz	Geoff McGrorey-Clark Eric Fossey Eric Van De Weyer Mon-Fri 11.00-14.00)	VK2EO VK2EFY VK2KUR	From VK2WI 1.845, 3.595, 7.146*, 10.125, 14.160, 24.950, 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (* morning only) with relays to some of 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2 m, 70 cm, 23 cm. The broadcast text is available on the Internet newsgroup *aus.radio.amateur.misc,* and on packet radio.	(F) (G) (S) (X)	$69.00 $56.00 $41.00
VK3	Victorian Division 40G Victory Boulevard Ashburton VIC 3147 Phone 03 9885 9261 Fax 03 9885 9298	President Secretary Treasurer (Office hours Tue & Thur 0830-1530) Web: http//www.tbsa.com.au/~wiavic/	Jim Linton Barry Wilton Rob Hailey	VK3PC VK3XV VK3NC	VK3BWI broadcasts on the 1st Sunday of the month, starts 10.30 am. Primary frequencies 3.615 LSB, 7.085 LSB, and FM(R)s VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225, and 70 cm FM(R)s VK3ROU 438.225, and VK3RMU 438.075. Major news under call VK3WI on Victorian packet BBS and WIA VIC Web Site.	(F) (G) (S) (X)	$75.00 $61.00 $47.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone 07 5496 4714	President Secretary Treasurer e-mail address: wiaq@brisbane.dialix.com.au	Rodger Bingham Malcolm McIntosh Bill Sebbens	VK4HD VK4ZMM VK4XZ	1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 14.342 MHz SSB, 28.400 MHz SSB, 29.220 MHz FM, 52.525 MHz FM, 146.700 MHz FM, 147.000 MHz FM, 438.525 MHz (Brisbane only), regional VHF/UHF repeaters at 0900 hrs Sunday. Repeated on 3.605 MHz SSB & 147.000 MHz FM, regional VHF/UHF repeaters at 1930 hrs EAST Monday. Broadcast news in text form on packet under WIAQ@VKNET.	(F) (G) (S) (X)	$74.00 $60.00 $46.00
VK5	South Australian Division 34 West Thebarton Rd Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone 08 8352 3428 Fax 08 8264 0463	President Secretary Treasurer Web: http://www.vk5wia.ampr.org/	Ian Hunt Graham Wiseman Joe Burford	VK5QX VK5EU VK5UJ	1827 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.700 FM Mid North, 146.800 FM Mildura, 146.825 FM Barossa Valley, 146.900 FM South East, 146.925 FM Central North, 147.825 FM Gawler, 438.425 FM Barossa Valley, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 USB, 7.065 USB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. 3.585 MHz and 146.675 MHZ FM Adelaide, 1930 hrs Monday.	(F) (G) (S) (X)	$75.00 $61.00 $47.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone 09 351 8873	President Secretary Treasurer Web: http://www.faroc.com.au/~vk6wia	Wally Howse Christine Bastin Bruce Hedland-Thomas	VK6KZ VK6ZLZ VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 1.825, 3.560, 7.075, 14.116, 14.175, 21.185, 29.680 FM, 50.150 and 438.525 MHz. Country relays 3.582, 147.350(R) Busselton and 146.900(R) Mt William (Bunbury). Broadcast repeated on 146.700 at 1900 hrs Sunday, relayed on 1.865, 3.563 and 438.525 MHz; country relays on 146.350 and 146.900 MHz.	(F) (G) (S) (X)	$62.00 $50.00 $34.00
VK7	Tasmanian Division PO Box 271 Riverside TAS 7250 Phone 03 6327 2096 Fax 03 6327 1738	President Secretary Treasurer	Ron Churcher Barry Hill Mike Jenner	VK7RN VK7BE VK7FB	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.725 (VK7RNE), 146.625 (VK7RMD), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs.	(F) (G) (S) (X)	$74.00 $60.00 $46.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).						

Note: All times are local. All frequencies MHz.

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Yaesu's Done It Again

FT-920 HF/6m Transceiver With DSP

Now there's no excuse for not taking advantage of the latest advances in Digital Signal Processing, transceiver design plus the fun of 6m operation. The stunning new Yaesu FT-920 is a high performance HF/6m multi-mode receiver that provides 100W PEP output on the 160-6m bands, incredible front-end performance based on the FT-1000MP design, and a huge array of features that make it a pleasure to use.

At first glance Yaesu's renowned Omni-Glow LCD screen is obvious, and its wide-angle view provides a wealth of information about the transceiver's operating status with multi-function metering, dual frequency displays and an Enhanced Tuning scale for DSP bandwidth, CW tuning, FM discriminator and more. Inside, the FT-920 is built around a rugged diecast unibody chassis which provides excellent heatsinking for the low distortion dual MRF255 160-6m FET power amplifier.

For more comfortable operating when weaker signals are present Yaesu's engineers dedicated themselves to enhancement of real-world signal to noise ratios, and after thousands of hours of design and testing have produced an industry-leading 33.3MIPS (millions of instructions per second) processing speed DSP in the FT-920 that provides a two-parameter noise reduction system with 32 steps of front panel adjustment. This amazing system also provides dual control DSP passband tuning, DSP auto-notch filter, an amazing new transmit Digital Speech Processor, DSP mic equalisation, fast acting DSP VOX circuitry as well as a Contest-ready Digital Voice Recorder!

Other features include an all-band (160-6m) auto antenna tuner which also provides greater receiver band-pass protection, Direct Digital Synthesis for clean local oscillators, selectable frequency-optimised receiver front-end pre-amps, and a Shuttle Jog tuning ring for fast QSY. A Dual Watch receive system allows you to check for band openings, especially handy when monitoring 6m. Also provided are SSB/CW/FM operation (AM with optional filter), 127 memories with alphanumeric labelling, IFshift and IF noise blanker to fight interference, plus an extensive menu system for selecting most "set and forget" functions.

The FT-920 is supplied with an MH-31B8 hand mic, DC power lead and comprehensive instruction manual.

Why not call for a copy of the Yaesu 6 page FT-920 colour brochure to learn more about this efficient transceiver that's without peer in its price class.

D 3420

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